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CURTIS'S
BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

AND

OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN;

WITH SUITABLE DESCRIPTIONS;

BY

SIR JOSEPH DALTON HOOKER, M.D., C.B., G.C.S.I.,
F.R.S., F.L.S., ETC.,
D.C.L. OXON., LL.D. CANTAB., CORRESPONDENT OF THE INSTITUTE OF FRANCE.

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HENRY LÉVÊQUE DE VILMORIN,

OF VERRIÈRES-LE-BUISSON, PARIS,

WHO DIED AUG. 24th, 1899,

I DEDICATE THIS VOLUME OF THE "BOTANICAL MAGAZINE,"

AS A FEEBLE TRIBUTE

TO HIS WORTH AND HIS WORKS.

J. D. HOOKER.

The Camp, Sunningdale,
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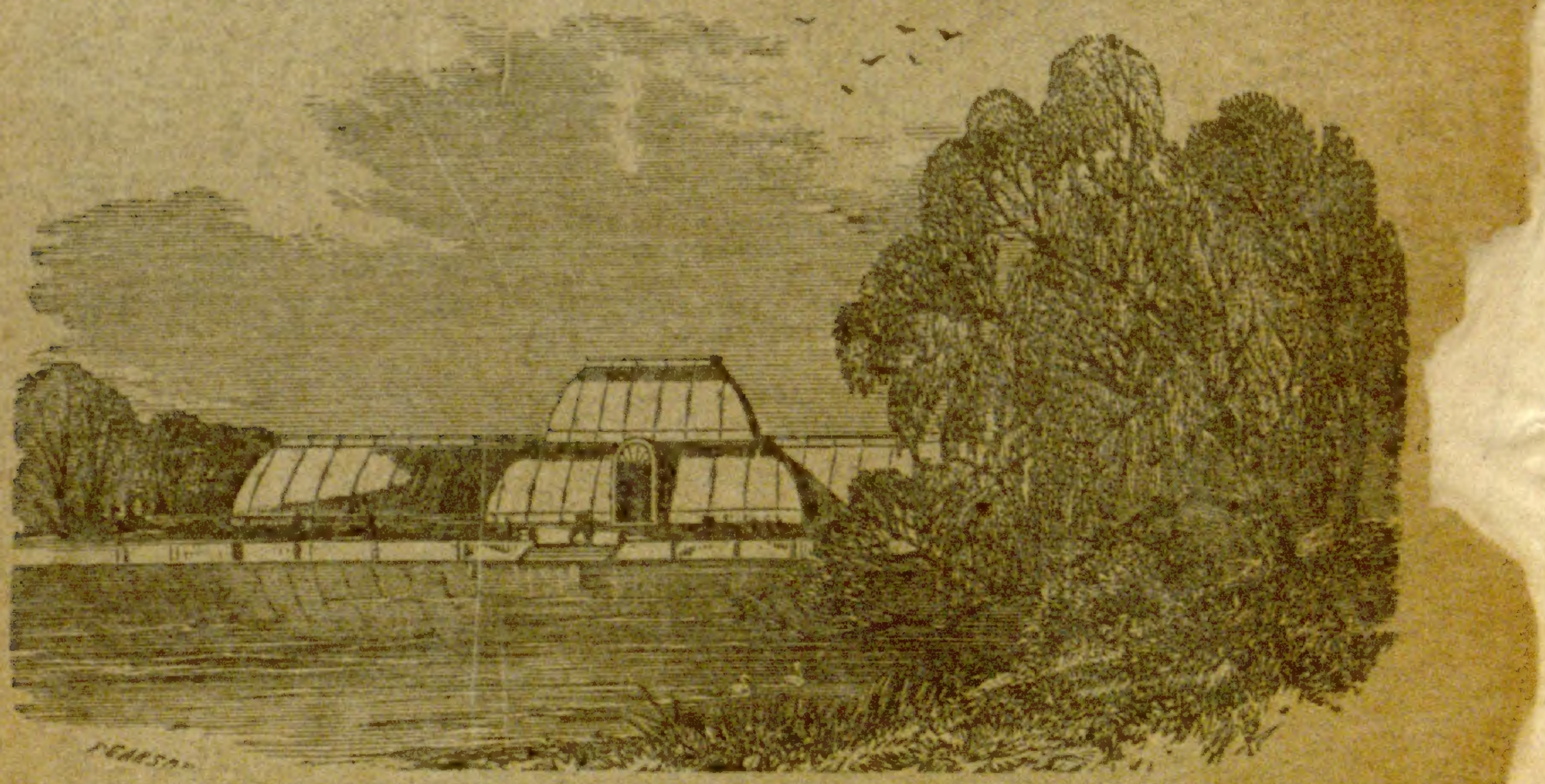
Late Director of the Royal Botanic Gardens of Kew.



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Tab. 7632.

ACALYPHA hispida.

Native of New Guinea.

Nat. Ord. Euphorbiaceæ.—Tribe Crotoneæ.

Genus Acalypha, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 311.)

Acalypha (Euacalypha) *hispida*; frutex dioicus, 10–15-pedalis, foliis longe petiolatis late ovato-cordatis v. rhombeo-ovatis, acuminatis subacute v. obtuse crenato-serratis basi rotundatis vel late cuneatis utrinque glabris puberulisve supra laete viridibus subtus pallidis, petiolo lamina breviore pubescenti-tomentellis, spicis femineis longissimis pendulis fere a basi densissime floriferis, floribus in glomerulos bracteatos et bracteolatos confertissimis, bracteis inconspicuis, bracteolis minutis subulatis lanceolatisve, sepalis 4 ovatis acutis hispidis, ovario minuto pilis albis stellatim hispido, stylo brevi, stigmatibus 3 longissimis sanguineis in lacinias valde elongatas capillares fissis.

A. hispida, *Burm. Fl. Ind.* p. 203 (sphalm. 303), t. 61, fig. 1 (*excl. cit. Rheede*). *Benth. in Hook. Lond. Journ. Bot.* vol. ii. (1843), p. 232; *Muell. Arg. in DC. Prodr.* vol. xv. pars. II. p. 815. *Schum. in Notizblatt K. Bot. Gart. et Mus. Berl.* vol. ii. p. 127. *Fl. Brit. Ind.* vol. v. p. 417.

A. densiflora, *Bl. Bijd.* p. 628. *Miq. Fl. Ind. Bat.* vol. i. pars II. p. 405.

A. Sanderi, *N.E. Br. in Gard. Chron.* 1896, vol. ii. p. 392; 1898, vol. i. p. 248, fig. 93. *André in Rev. Hortic.* vol. lxx. (1898), p. 458, cum ic. *Gartenfl.* 1898, p. 276.

A. rubra, *Noronh. ex Hassk. in Hoev. et de Vr. Tijdschr. Nat. Ges.* vol. xi. (1844), p. 216 nomen tantum.

Caturus spiciflorus, *Roxb. Fl. Ind.* vol. iii. p. 760. *A. Juss. Tent. Euphorb.* pp. 45, 115, t. 14, fig. 45 (*non Linn.*).

Cauda felis, *Rumph. Herb. Amb.* vol. iv. t. 36.

It is singular that so remarkable and ornamental a plant as that here figured, and one so long known in cultivation in India and the Malay Islands, should have been only quite recently introduced into Europe. Rumphius, writing in 1690, described and figured it for his "Herbarium Amboynense" (published in 1750), as rare in Amboyna, and known only in gardens and where planted in shrubberies. Roxburgh, upwards of sixty years ago, described it (under the wrong name of *Caturus spiciflorus*, Willd.) from specimens growing in the Garden of the Honourable East India Company, Calcutta. It is entered in works on Malayan botany as cultivated in Singapore and Java; and Bentham is the authority for its being found in the Fiji Islands, of which it has never been proved to be a native. Under

these circumstances its discovery, no doubt in a wild state, on the shores of the Bismarck Archipelago, in Eastern New Guinea, by Mr. Micholitz, when collecting for Messrs. Sander in 1896, is a notable one in the annals of horticulture. Hitherto, only the female plant has been described, for it appears to me doubtful whether that figured at tab. 37 of Herb. Amboin., which has been considered to be the male (but which is not described as such by Rumphius) can safely be referred to the same species.

Acalypha hispida cannot fail to become an exceptionally popular stove plant, not only because of its great beauty and striking habit, but from its flowering literally all the year round. The largest plant now at Kew, procured from Messrs. Sander in 1898, has been in fine condition ever since, having now upwards of fifty flowering spikes, and others still to expand. It must, however, be borne in mind, that the introduction of the male plant and pollination of the female thereby, would in all probability check further flowering of the female for a definite period devoted to the maturation of seed.

Descr.—An erect, dioecious shrub, ten to fifteen feet high, with brown bark, and spreading leafy green branches. *Leaves* eight to ten inches long, opposite and alternate, broadly ovate or rhombic-ovate, acuminate, base rounded or broadly cuneate, often notched at the insertion of the petiole, surfaces glabrous or puberulous, upper dark green, lower pale, margins irregularly acutely or obtusely crenate-toothed; nerves eight to ten pairs, petiole one-fifth to one-fourth shorter than the blade, terete, tomentosely pubescent. *Female spikes* axillary, pendulous, twelve to eighteen inches long by one in diameter, terete, shortly peduncled, obtuse, flexuous, scarlet. *Flowers* minute, sessile in densely crowded glomerules, minutely bracteate and bracteolate. *Sepals* four, ovate, hispidly pubescent. *Ovary* three-lobed, hispid with white, stellately spreading hairs, style very short, stigmas three, each forming a brush of very long capillary scarlet filaments.—*J. D. H.*

Fig. 1, Female flowers, with bract and bracteoles; 2, sepals; 3, ovary with style and stigmas; 4, calyx and ovary with stigmas removed; 5, transverse section of the same:—*All enlarged.*

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Tab. 7633.

LEWISIA Tweedyi.

Native of Washington Territory.

Nat. Ord. Portulaceæ.

Genus Lewisia, *Pursh.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 159.)

Lewisia (Oreobroma) *Tweedyi*; herba acaulis, glaberrima, multiflora, caudice brevissimo radiceque elongato carnoso, foliis omnibus radicalibus patenti-recurvis late ovatis obovatisve carnosulis apice rotundatis basi in petiolum crassum anguste alatum angustatis, supra saturate viridibus subtus pallidis, pedunculis foliis paullo longioribus 1- rarissime 2-floris eglandulosis hinc illinc bracteatis, floribus amplis, sepalis orbiculari-oblongis, petalis 8 1½–2-pollicaribus sepalis quadruplo longioribus anguste obovato-oblongis obtusis, staminibus ad 20, filamentis basi pilosis, antheris parvis aureis, ovario oblongo, stylo gracili, stigmatibus 3 brevibus recurvis, capsula polysperma basi circumscisse 3 valvi, valvis a basi ad apicem dehiscentibus, seminibus globosis granulatis, arillo laxo.

L. Tweedyi, *B. Robins. in A. Gray, Synopt. Fl. N. Am.* vol. i. p. 268.

Calandrinia Tweedyi, *A. Gray, in Am. Acad. Arts & Sc.* vol. xxii. (1887), p. 277.

Oreobroma Tweedyi, *Howell in Erythea*, vol. i. p. 32 (1893).

Owing to the difficulty of defining the limits of the closely allied genera *Lewisia*, Pursh, and *Calandrinia*, H. B. K., the plant here figured has by American authors been placed under both, and also referred to a separate genus, *Oreobroma*, Howell. I have here adopted Mr. B. Robinson's view, who, after an examination of all the N. American species of the two genera, separates them according to the dehiscence of the capsule, which in *Calandrinia* dehisces from the apex to the base, and in *Lewisia* in the opposite direction. *Oreobroma*, the chief character of which is the fleshy roots (eaten by the Indians), he reduces to a section of *Lewisia*.

The type of the genus *Lewisia* is *L. rediviva*, figured at tab. 5395 of this work. It differs greatly from *L. Tweedyi* in the leaves being cylindric, the bracts of the peduncles collected in a whorl, the very numerous petals, and the eight filiform style branches.

L. Tweedyi is a native of the alpine region of the Wenatchee Mts. in Washington State, at an elevation of six thousand to seven thousand feet. The specimen figured

was purchased from Mr. A. J. Johnson of Columbia Nursery, Astoria, Oregon, in January, 1898. It flowered in the following May in the Alpine House of the Royal Gardens, Kew.

Descr.—A glabrous, rather succulent, many-flowered, stemless herb, with a stout fleshy root. *Leaves* many, all radical, two to three and a half inches long, including the short, narrowly winged petiole, spreading and recurved, blade one and a half to two inches long, broadly ovate or obovate, obtuse, base narrowed into the petiole, bright green above, paler beneath. *Peduncles* rather longer than the leaves, one- rarely two-flowered, bearing one or a few small green bracts. *Flowers* three inches in diameter. *Sepals* about half an inch long, orbicular-oblong, obtuse, green, clouded with pink. *Petals* eight, one and a half to two inches long, narrowly obovate-oblong, obtuse, straw-coloured, passing into bright pink in the tips and sides above the middle. *Stamens* about 20, filaments hairy, anthers small. *Ovary* oblong, style long, slender, stigmas three, very short, recurved. *Capsule* not seen—*J. D. H.*

Fig. 1, Stamens; 2, a stamen, showing insertion of filament; 3, ovary; 4, longitudinal section of the same, showing ovules:—*All enlarged.*

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Tab. 7634.

LILIUM rubellum.

Native of Japan.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Lilium, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 816.)

Lilium (Eulirion) *rubellum*; bulbo globoso squamis multis lanceolatis, caule gracili ad apicem foliato, foliis alternis laxe dispositis oblongo-lanceolatis vel lanceolatis viridibus glabris distincte 3–5-nervatis, floribus paucis corymbosis, perianthio infundibulari rubello immaculato segmentis oblanceolato-oblongis obtusis supra medium patulis, staminibus perianthio 2–3-plo brevioribus, stylo staminibus longiore.

L. rubellum, *Baker in Gard. Chron.* 1898, vol. ii. p. 321, fig. 128.

This beautiful Lily is allied most closely to *L. japonicum*, Thunb. (*L. Krameri*, Hook. f. in Bot. Mag. t. 6058), from which it differs by its broad leaves, like those of *L. speciosum*, and smaller pink flowers. Although it is new to cultivation, and had not received any botanical name, there is a good figure of it in the Honzo Zufu (vol. li., tab. 6), a work of coloured drawings in ninety-six volumes, published in 1828 by the Japanese artist Iwasaki Tsunemasa, for an account of which see Dickins in *Journal of Botany*, 1887, p. 147. Kew first received it in flower from Messrs. Bunting of Chelmsford in February, 1898. Their stock of the plant was purchased by Messrs. Wallace of Colchester, by whom it was exhibited at the Temple show of the Royal Horticultural Society in May. Probably it will grow larger under cultivation. At any rate, it is a very distinct plant, and sure to be a general favourite.

Descr.—*Bulb* globose, middle-sized; scales many, lanceolate. *Stem* slender, terete, green, spotted with red-brown, laxly leafy from the apex to the base. *Leaves* all alternate, about twenty to a stem, oblong-lanceolate or lanceolate, two to three inches long, firm, bright green, distinctly three-nerved or five-nerved. *Flowers* few, corymbose. *Perianth* funnel-shaped, pink, unspotted, three inches long, three inches in diameter when expanded; segments oblanceolate-oblong, obtuse, spreading in the

upper half, the three inner an inch broad, the outer narrower. *Stamens* less than half as long as the perianth; anthers small, linear, bright yellow. *Style* arcuate, much overtopping the anthers.—*J. G. Baker.*

Fig. 1, Front view of anther: 2, back view of anther; 3, pistil:—*All more or less enlarged.*

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Tab. 7635.

GAULTHERIA trichophylla.

Native of the Himalaya and W. China.

Nat. Ord. Ericaceæ.—Tribe Andromedeæ.

Genus Gaultheria, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 582.)

Gaultheria *trichophylla*; fruticulus sempervirens, humilis, coespitosus, ramosissimus, caulibus subterraneis filiformibus vage ramosis elongatis intertextis repentibus nudis, emersis erectis setosis foliosis 4–6-pollicaribus, foliis $\frac{1}{6}$–$\frac{1}{2}$ poll. longis, subsessilibus patulis ovato-oblongis subacutis obtusisve obscure crenato-dentatis coriaceis supra saturate viridibus nervis impressis, subtus pallidis nervis prominulis, crenis setula nigra decidua instructis, floribus axillaribus solitariis breviter pedicellatis roseis, pedicellis bracteolatis calyceque glabris, sepalis ovatis, corolla globosa rosea ore constricto, lobis parvis ovatis revolutis, filamentis globosis puberulis, antherarum loculis aristato-acuminatis, connectivo dorso 2-cuspidato, disci dentibus 10 obtusis, ovario glaberrimo, baccis parvis pendulis turbinatis obtuse 5-lobis azureis.

G. trichophylla, *Royle, Ill. Bot. Himal.* p. 260, t. 63, f. 3. *DC. Prodr.* vol. vii. p. 592. *Clarke in Fl. Brit. Ind.* vol. iii. p. 457.

This, the smallest known species of its genus, is a common plant in the alpine and sub-alpine regions of the Himalaya, from Kashmir to Bhotan, in moist peaty places, at elevations of ten to thirteen thousand feet, where it sometimes forms bright green patches of considerable area, studded with pink bells, followed by dark blue berries. Quite recently it has been collected on the mountains of Western Szechuen, on the Tibetan frontier of China, at elevations of nine to thirteen thousand feet by Mr. A. E. Pratt. Therefore it no doubt extends continuously from Bhotan to this region, as do many other Himalayan plants.

The Royal Gardens are indebted to the Hon. Charles Ellis, of Frensham Hall, Haslemere, for this interesting little plant. It flowers both in the Arboretum and in the Rock Garden early in May.

Descr.—A dwarf, tufted, evergreen shrub, with wiry, much-branched, creeping, underground stems, and erect leafing dark brown slender branches, bearing scattered black bristles. *Leaves* one-sixth to half an inch long, very shortly petioled, spreading, ovate-oblong, subacute or

obtuse, entire or obscurely crenulate, with a rigid black deciduous bristle on the margin, or in each crenature, coriaceous, dark green shining above, with impressed nerves, pale beneath, with prominent nerves. *Flowers* very shortly pedicelled, solitary, axillary, nodding, pink, about as long as the leaves; pedicel bracteolate. *Sepals* ovate. *Corolla* globosely campanulate, mouth contracted, with five revolute teeth. *Filaments* globose, puberulous, anther-cells sub-aristately acuminate, connective with a bifid dorsal spur. *Berry* turbinate, 5-lobed, blue.—*J. D. H.*

Fig. 1, Leaf; 2, flower with pedicel and bracteoles; 3 and 4, stamens; 5, pistil and disk; 6, transverse section of ovary:—*All enlarged*; 7, fruit of the *Nat. size.*

M.S.del, J.N.Fitch lith.

Tab. 7636.

MECONOPSIS HETEROPHYLLA.

Native of California.

Nat. Ord. Papaveraceæ.—Tribe Eupapavereæ.

Genus Meconopsis, *Vig.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 52.)

Meconopsis *heterophylla*; herba erecta, fere glaberrima, carnosula, pallide viridis, caule 1–2-pedali gracili parce ramoso, foliis radicalibus 3–5-pollicaribus patentibus petiolatis linearibus pinnatipartitis sparse pilosis segmentis ½–1-pollicaribus subopppositis ovalibus oblongis lineari-oblongisve obtusis integerrimis v. grosse pauci-crenatis rhachi valida, foliis caulinis majoribus, supremis longioribus simplicibus integris v. crenatis, floribus longe pedunculatis 2 poll. latis, sepalis lineari-oblongis glaberrimis, petalis orbicularibus rubro-aurantiacis basi rubro-purpureis, filamentis breviusculis, antheris parvis oblongis aureis, capsula turbinata crasse costata vertice convexa, stylo brevi, stigmate capitato 4–6-lobo, seminibus orbicularibus compressis.

M. heterophylla, *Benth. in Trans. Hort. Soc.* Ser. II. vol. i. (1835), p. 408. *Torr. & Gray, Fl. N. Am.* vol. i. p. 61. *Hook. & Arn. Bot. Beech. Voy.* p. 320. *Hook. Ic. Pl.* t. 732. *Brew. & Wats. Bot. Calif.* vol. i. p. 22.

M. crassifolia, *Benth. l.c. Torr. & Gray l.c. Hook. & Arn. l.c.*

Meconopsis heterophylla is the sole American representative, as *M. cambrica* is the sole European, of a genus which is well represented only in the loftier Himalaya and the mountains of W. China. Both the European and American species are of very limited range, the former to Wales, Ireland, and the Pyrenees, the latter to a very few localities in W. America, from Clear Lake, in lat. 42° N. to San Quintin Bay in the California Peninsula, lat. 30½° N. It also inhabits the Humboldt range in W. Nevada. As might be anticipated from the remoteness of its native country from those of its Old World congeners, and especially from its inhabiting so much hotter and drier a climate than these do, it exhibits some structural peculiarities. Such are the pinnatipartite foliage, the remarkable elongate obconical truncate smooth capsule, and smooth, orbicular seeds.

David Douglas was the discoverer of *M. heterophylla*, during his journey across the continent of N. America in 1833. Though covering so wide a range of latitude it cannot be a common plant, few collectors having met with

it. The specimen figured was raised at the Royal Gardens, Kew, from seeds received from a Californian nurseryman. It flowered in the month of June in the Herbaceous ground.

Descr.—A pale green, rather succulent herb. *Stem* one to two feet high, erect, sparingly branched, glabrous. *Leaves* linear-oblong, pinnatipartite, radical two to four inches long, spreading, sparsely hairy, soon withering, segments sub-opposite, three to six pairs, and a terminal, about half an inch long, ovate-oblong or linear, obtuse, entire, or distantly crenate, rhachis pilose; cauline leaves much larger, with longer segments, uppermost linear. *Flowers* on very long slender peduncles, two inches in diameter. *Sepals* linear-oblong, glabrous. *Petals* orbicular, orange-red, dark red-purple towards the base. *Stamens* numerous, anthers short, yellow. *Capsule* narrowly turbinate, truncate, crown tumid, four to six-lobed, terminated by the short style, stigma globose, four to six-lobed. *Seeds* small, orbicular, compressed, smooth. —*J. D. H.*

Fig. 1, Ovary; 2, ripe capsule; 3, seed:—*All enlarged.*

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TAB. 7632.—ACALYPHA HISPIDA.
„ 7633.—LEWISIA TWEEDYI, *Robins.*
„ 7634.—LILIUM RUBELLUM.
„ 7635.—GAULTHERIA TRICHOPHYLLA.
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Tab. 7637.

GENTIANA Burseri.

Native of the Pyrenees and Western Alps.

Nat. Ord. Gentianaceæ.—Tribe Swertieæ.

Genus Gentiana, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 815.)

Gentiana (Cœlanthe) *Burseri*; elata, robusta, glaberrima, foliis infimis maximis breviter petiolatis elliptico-oblongis 7-nerviis marginibus lævibus, caulinis sessilibus acutis acuminatisve, floribus in axillis foliorum superiorum cymoso-fasciculatis 1½-pollicaribus breviter pedicellatis, calycis membranacei tubo corolla breviore sacciforme ad basin fisso, ore truncato 5-denticulato, corolla clavato-campanulata pallide aurea 5–7-loba, lobis tubo basi intus eglanduloso ter brevioribus late ovatis obtusis, plicarum lobulis brevibus rotundatis, filamentis gracilibus, antheris linearioblongis primum cohærentibus, loculis extrorsum dehiscentibus, ovario cylindraceo basi dilatato 5–7-lobo apice in stylum robustum attenuato, stigmatibus brevibus, capsula stipitata anguste ellipsoidea rostrata.

G. Burseri, *Lapeyr. Hist. Abr. Pl. Pyr.* p. 132. *Griseb. Gen. et Sp. Gent.* p. 298, *et in DC. Prodr.* vol. ix. p. 116. *Duby, Bot. Gall.* p. 326. *Loisel. Fl. Gall.* vol. i. p. 178. *Gren. & Godr. Fl. Franc.* vol. ii. p. 89. *Benth. Cat. Pl. Pyren.*, &c., p. 81.

G. punctata, *Vill. Hist. Pl. Dauph.* vol. ii. p. 512 (*non Linn.*).

G. biloba, *DC. Fl. Fr.* vol. iii. p. 653; *Ic. Pl. Gall. Rar.* t. 15.

G. macrophylla, *Bertol. Fl. Ital.* vol. iii. p. 79 (*non Pall.*).

Cœlanthe Burseri, *G. Don, Gen. Syst. Gard.* vol. iv. p. 185.

This noble *Gentian* is a very near ally of *G. punctata*, a native of mountain regions, from Provence to the Carpathians, thence extending to the Balkans of Roumelia. It differs from that plant chiefly in the larger leaves, with more (seven) nerves. Forms occur of both with the corolla speckled with black dots. The headquarters of *G. Burseri* are the Pyrenees, where, according to Bentham, it is "assez commune." It also occurs in the Alps of Piedmont, Provence, and Dauphine. Bentham recognized two varieties of it in the Pyrenees, the type, with punctate corolla, and *β*, *hybrida*, with impunctate corolla, which, though a much rarer plant, is Lapeyrouse's type. This var. *β* he found near Mont Louis, where it grew intermixed with the type and *G. lutea*, Linn., and as he there found every intermediate between these two species, he regarded var. *β* as a hybrid, and so designated it. I may remind the reader that *G. lutea* is a very widely distributed plant

belonging to a totally different section of the genus, with a rotate corolla, sessile ovary, and winged seeds, and that it hybridizes freely with various other species of the *Cœlanthe* section. Of these hybrids Grisebach (in DC. l.c. p. 86) enumerates five, but that with *G. Burseri* is not amongst them. The latter is, however, included in the hybrids of *lutea* by Focke (*Pflanzen-Mischlinge*, p. 256).

I am indebted to the Rev. Canon C. J. Parker, of Upton Cheyney, Bristol, for the specimen here figured of this fine Gentian, which flowered in his garden in July, 1898. That gentleman informs me that he found the plant in quantities on damp, decaying wood, near the top of Rue d'Enfer, in the Val de Lys, above Luchon, where one fine specimen was actually growing on a fallen tree. The roots which he sent home he planted in half paraffin tubs, full of leaf mould and the debris of a faggot pile, which he placed on a slope twenty feet above a brook, and there they have thriven amazingly.

Descr.—*Stem* three to four feet high, robust, terete. *Lower leaves* eight to ten inches long, elliptic-ovate, obtuse, seven-nerved, narrowed into a short, stout petiole, nerves very strong beneath; upper and floral leaves sessile, ovate, sub-cordate, five-nerved. *Flowers* in very short cymes, densely crowded in the axils of the upper leaves, very shortly and stoutly pedicelled; bracts elliptic, sub-acute, three-nerved, an inch long, or longer. *Calyx* three-quarters of an inch long, membranous, split to the base, mouth truncate, five-toothed, and denticulate. *Corolla-tube* one and a half inches long, between clavate and campanulate, pale yellow, clouded with green; lobes five to seven, one-third the length of the tube, broadly ovate, very obtuse, pale golden-yellow, speckled (as is the throat) with minute black dots, lobules in the sinus about a tenth of an inch long and broad, rounded. *Anthers* shorter than the slender filaments, bursting outwardly. *Hypogynous glands* 0. *Ovary* narrow, cylindric, tapering into a stout style, with reflexed, short, broad stigmas, base dilated into five to seven spreading lobes. *Capsule* stipitate, narrowly ellipsoid, valves beaked. *Seeds* minute, sub-orbicular.—*J. D. H.*

Fig. 1, Calyx and ovary; 2, portion of corolla laid open, and four stamens; 3, fruit; 4, seed:—*All enlarged.*

belonging to a totally different section of the genus, with a rotate corolla, sessile ovary, and winged seeds, and that it hybridizes freely with various other species of the *Cœlanthe* section. Of these hybrids Grisebach (in DC. l.c. p. 86) enumerates five, but that with *G. Burseri* is not amongst them. The latter is, however, included in the hybrids of *lutea* by Focke (*Pflanzen-Mischlinge*, p. 256).

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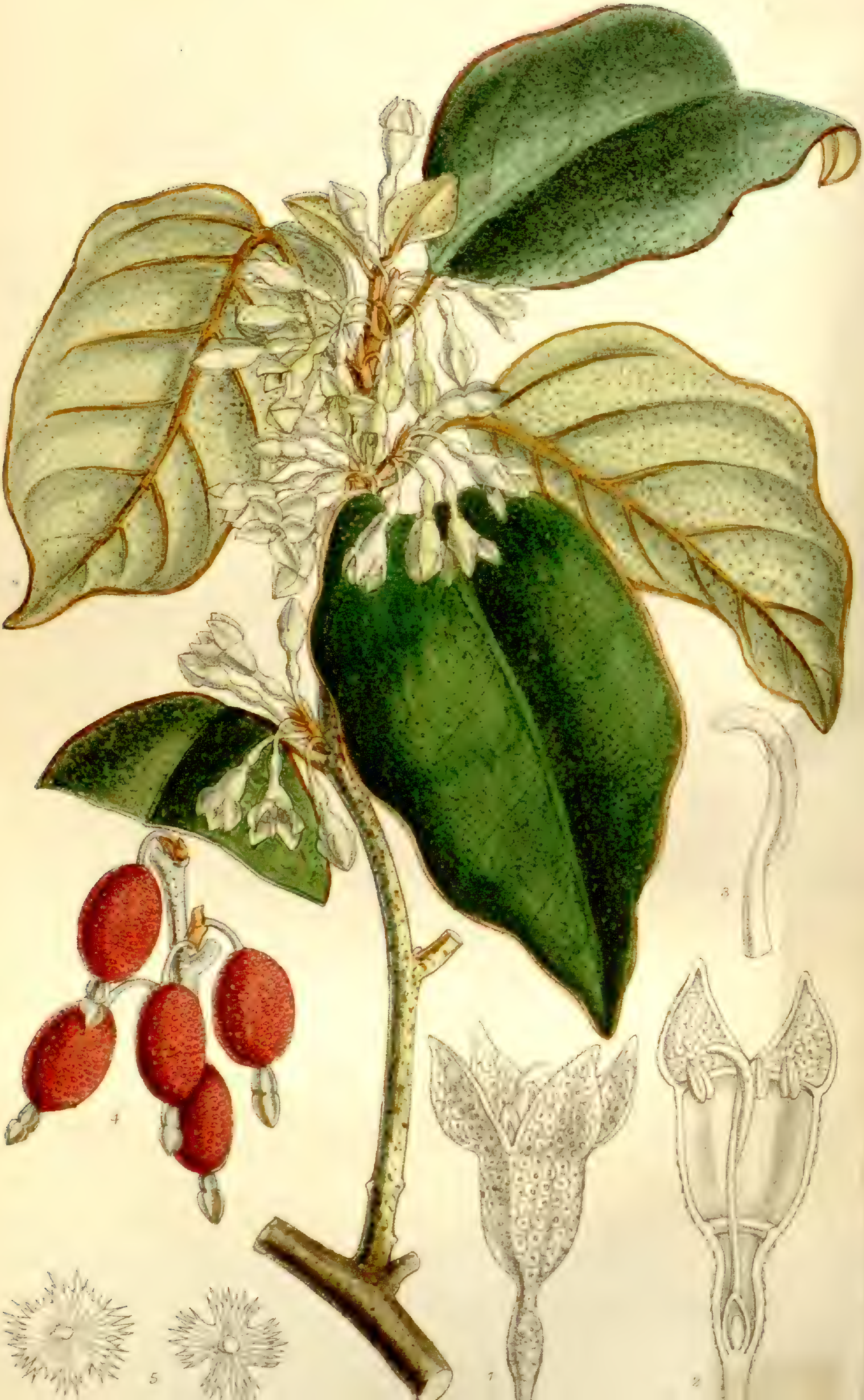
Fig. 1, Calyx and ovary; 2, portion of corolla laid open, and four stamens; 3, fruit; 4, seed:—*All enlarged.*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TAB. 7638.

ELÆAGNUS MACROPHYLLA.

Native of Japan and Formosa.

Nat. Ord. ELÆAGNACEÆ.

Genus ELÆAGNUS, *Linn.* (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 204.)

ELÆAGNUS *macrophylla ;* frutex v. arbuscula inermis, ramis cortice fusco obtectis, ramulis foliis subtus et inflorescentia copiosissime argenteo-lepidotis ; foliis 3–4-pollicaribus breviter petiolatis late ovatis obtusis utrinque sub 6-nerviis, nervis subtus marginibusque undulatis rubro-brunneis, supra saturate viridibus sparse argenteo-lepidotis, petiolo ad $\frac{1}{2}$-poll. longo, floribus $\frac{2}{3}$ poll. longis confertis nutantibus v. pendulis, pedicellis $\frac{1}{4}$–$\frac{1}{2}$ poll. longis, gracilibus decurvis, basi squamis parvis brunneis instructis, perianthii tubo anguste ellipsoideo terete, apice constricto et in limbum campanulatum obscure tetragonum repente dilatato, limbo intus basi et ore annulato, lobis limbo æquilongis triangulari-ovatis obtusis intus stellato-puberulis, stylo gracili, stigmate elongato obtuso recurvo, drupis $\frac{2}{3}$ poll. longis ellipsoideis roseis lepidotis limbo perianthii griseo coronatis, putamine tenui fibroso-coriaceo sulcato.

E. macrophylla, *Thunb. Fl. Jap.* p. 67. *Schlecht. in DC. Prodr.* vol. xiv. p. 614. *Maxim. in Bull. Acad. Imp. Pétersb.* vol. xvi. p. 377; *Mél. Biol.* Pars. vii. p. 560.

Of the genus *Elæagnus*, of which there are upwards of twenty-five reported species, only one has previously been figured in this work. It is the *E. multiflora*, Thunb. (tab. 7341) also a native of Japan. Eight species, including that here figured, are cultivated in the Arboretum of the Royal Gardens, Kew, the fruit of one of which, *E. angustifolia*, *L.*, is a favourite ingredient in the sherbet of some Eastern countries.

Elæagnus macrophylla has a wide, far Eastern distribution, from the Korean Archipelago to Japan and Formosa, where, according to Mr. Maries, it ascends to seven thousand feet elevation. The specimen here figured was communicated by Messrs. Veitch, from their nursery at Coombe Wood, where the plant flowers in October, and fruits in the following May. Mr. Veitch informs me that it was imported from Japan through their collector, Mr. Maries, in 1879, and that their largest plant is six feet high, and but for pruning would have been higher. As with other species of the genus, the lepidote scales on the young

branches, leaves, and flowers are beautiful microscopic objects. The fruit is very ornamental.

Descr.—A shrub, or small, ramous, thornless tree; branches covered with grey brown bark; branchlets, leaves beneath, inflorescence and fruit silvery white, with a dense clothing of lepidote scales, branchlets speckled with red-brown. *Leaves* three to four inches long, shortly petioled, ovate, obtuse, deep green above, and sparsely lepidote, midrib and six pairs of nerves beneath red brown, as are their undulate margins; petiole stout, about half an inch long. *Flowers* very many, in axillary clusters, nodding and drooping; pedicels slender, about three-quarters of an inch long, with small, brown, linear bud-scales at the base. *Perianth* two-thirds of an inch long, tube narrowly ellipsoid, suddenly dilated into a campanulate limb, which is cleft about halfway up into four triangular-ovate, obtuse lobes, pubescent on their inner faces. *Anthers* small, oblong. *Style* slender, stigma elongated, obtuse, recurved. *Fruit* two-thirds of an inch long, ellipsoid, bright rose-red, lepidote, crowned with the persistent withered limb of the perianth.—*J. D. H.*

Fig. 1, Flower; 2, half of the perianth viewed from within; 3, stigma and portion of style; 4, ripe fruit; 5, lepidote scales:—All but fig. 4 *enlarged*.

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Tab. 7639.

DENDROBIUM capillipes.

Native of Burma.

Nat. Ord. Orchideæ.—Tribe Dendrobieæ.

Genus Dendrobium, *Swartz;* (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 498.)

Dendrobium (Eudendrobium) *capillipes*; pseudobulbis 2–3-pollicaribus erectis adultis fusiformis-clavatis ad ½ poll. diam. leviter compressis, internodiis 5–6 vaginis pallidis membranaceis rubro-fusco marginatis velatis, foliis paucis 5–6 poll. longis ad ½ poll. latis obtuse acuminatis læte viridibus, pedunculo gracili laterali erecto foliis subæquilongo 4-floro vaginis parvis distantibus instructo, floribus nutantibus, bracteis lanceolatis pedicellis (cum ovario) ½ poll. longis gracilibus dimidio brevioribus, perianthio explanato pollicem diametro aureo, sepalis lineari-oblongis acutis quam petalis orbicularibus brevioribus, mento subcorniforme obtuso, labello orbiculari emarginato, ima basi convoluto et in unguem brevem latam angustatos, disco basin versus costa crassa lata elevata postice rotundata instructo, anthera mitriforme apice truncata 3-loba.

D. capillipes, *Reichb. f. in Gard. Chron.* 1867, p. 997, and 1880, vol. i. p. 743; *Xen. Orchid.* vol. ii. p. 164, t. 169. *Hook. f. Fl. Brit. Ind.* vol. v. p. 751. *Veitch, Man. Orchid. Pl. Dendrob.* p. 26.

A very attractive little Dendrobe, procured by the late Rev. C. Parish, from hills north of Thayet-myo (?Thayetpamein, on the Sittang river), and of which he sent to Kew living and dried specimens in 1872. It has probably a wide range in the Burmese mountains, for, on a ticket attached to other specimens, he gives as habitat, "Yanzalin district, 1875, latterly on Ta-ok," and Sir H. Collett collected a large flowered variety of it on the Shan Hills, at 3000 feet elevation.

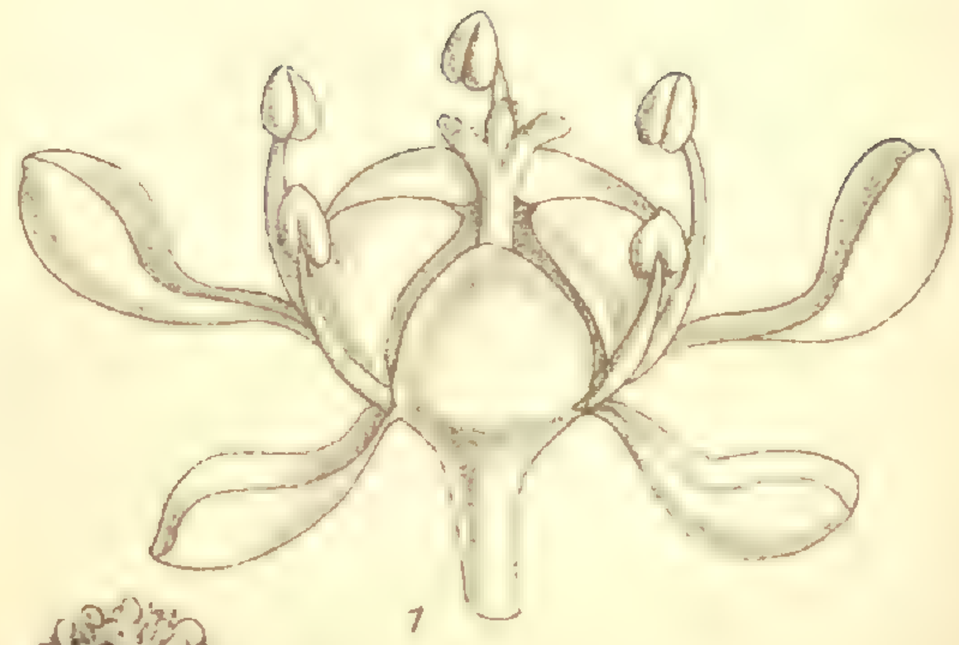
It may be seen from all the descriptions previously published, that the specimen here figured represents a much finer state of *D. capillipes* than those hitherto cultivated, in which the pseudobulb has three or four internodes, and the leaves are small and lanceolate. Further, the lip is described as having an orange blotch, or as in *capillipes*, var. *elegans* of Reichenbach (in *Gard. Chron.* 1880, vol. i. p. 743) has a dark orange base, which in our plant is replaced by a few red streaks on each side of the base above the claw.

February 1st, 1899.

D. capillipes has been for many years in cultivation in the Orchid House of the Royal Gardens, Kew, where it flowers annually between April and July.

Descr.—*Pseudobulb* erect, fusiformly clavate, about four inches long, by half an inch thick, of six to eight internodes, clothed with pale membranous sheaths bordered with red-brown. *Leaves* five to six inches long, by about half an inch wide, acute, bright green. *Peduncle* lateral on the pseudobulb, very slender, erect, bearing two to four nodding flowers, and a few distant, small sheaths. *Bracts* lanceolate, half the length of the slender, decurved pedicel and ovary. *Perianth* about an inch in diameter, golden-yellow, segments spreading. *Sepals* linear-oblong, acute, shorter than the orbicular petals. *Mentum* stout, about half as long as the sepals, conico-cylindric, obtuse. *Lip* nearly as large as the rest of the perianth, orbicular, emarginate, explanate, base narrowed into a very short claw, with an orange blotch at the base, or a few red streaks on each side, disk with a short, broad, thickened ridge at the base that ends posticously in a rounded knob over the claw. *Anther* mitriform, top broadly truncate and three-lobed.—*J. D. H.*

Fig. 1, Base and claw of lip; 2, interior of mentum, column, and anther; 3, auther; 4 pollinia:—*All enlarged.*



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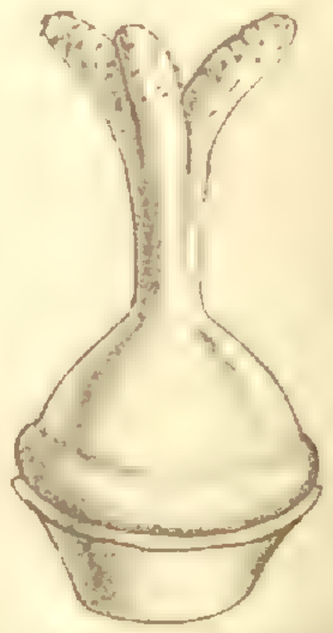

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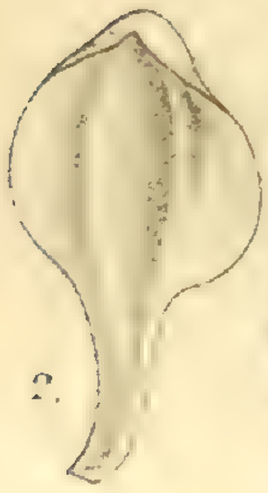

2.

Tab. 7640.

CEANOTHUS integerrimus.

Native of California.

Nat. Ord. Rhamnaceæ.—Tribe Rhamneæ.

Genus Ceanothus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 378.)

Ceanothus (Euceanothus) *integerrimus*; frutex erectus, inermis, glaber v. partibus novellis puberulis, ramis gracilibus, foliis alternis gracile petiolatis oblongis ovatis v. ovato-cordatis acutis v. obtusis integerrimis supra saturate viridibus subtus pallidis, stipulis parvis subulatis, floribus minutis in glomerulos pedunculatos confertis, glomerulis cylindricis axillaribus et in paniculos terminales dispositis albis v. pallide cœruleis, sepalis late ovatis, petalis duplo longioribus ungue laminam cymbiformem æquante, antheris rubro-purpureis, capsula subglobosa lævi.

C. integerrimus, *Hook. et Arn. Bot. Beech. Voy.* p. 329. *Torr. & Gr. Fl. N. Am.* vol. i. p. 686. *A. Gray, Synopt. Fl.* vol. i. part II. p 411. *Benth. Pl. Hartw.* p. 302. *Durand, Pl. Pratten.* p. 85. *Torrey, Pacific Railr. Rep.* pp. 4, 75; *Newb. l.c.* pp. 6, 69. *Boland. Cat. Pl. Calif.* p. 8. *S. Watson, in Proc. Am. Acad.* vol. x. p. 334; *Bibl. Ind. N. Am. Bot.* p. 165. *Lindl. in Gard. Chron.* 1856, p. 36, *cum* ic. xylog.

C. californicus, *Kellogg in Proc. Calif. Acad.* vol. i. 1855, p. 55.

C. nevadensis, *Kellogg, l.c.* vol. ii. 1863, p. 152, fig. 45.

C. thyrsiflorus, *var.* macrothyrsus, *Torr. Bot. Wilkes Exped.* p. 263.

C. integerrimus is a native of the Sierra Nevada of California and British Columbia, at elevations of two thousand to four thousand feet, from Washington to St. Bernardino and S.E. Arizona. It is one of the many discoveries of David Douglas in 1833, who collected a small-leaved variety, that occurs at various points of the range of the species. I found it when travelling with Dr. Gray, fruiting in September, 1877, in Strawberry Hill Valley, near Mt. Shasta, and in the Wellingtonia Grove of Calaveras. It was introduced into this country by Mr. Robert Wrench, who gave seeds of it to the Royal Horticultural Society, in whose gardens it flowered in 1856, and was figured at the time by Lindley in the *Gardeners' Chronicle*, cited above. It has been in cultivation in the Arboretum, Kew, for many years, growing in a sheltered position, and flowering freely in June.

Descr.—An erect shrub, with very slender branches, young branches puberulous, quite glabrous in maturity.

Leaves all alternate, shortly petioled, one to three inches long, ovate, ovate-cordate or oblong, obtuse or acute, quite entire, deep green above, pale, and sometimes pubescent beneath; stipules very small, subulate. *Flowers* minute, white or pale blue, on very slender pedicels, which are collected in globose, sessile or peduncled heads, which again are disposed in axillary and terminal panicled, globose or cylindric thyrsi, two to four inches long. *Sepals* triangular-ovate, incurved. *Petals* twice as long, their claw as long as the boat-shaped limb. *Anthers* red-purple. *Capsule* nearly globose, quite smooth.—*J. D. H.*

Fig. 1, Flowers; 2, petal; 3, ovary:—*All enlarged.*

3.

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Tab. 7641.

EPILOBIUM obcordatum.

Native of California.

Nat. Ord. Onagrarieæ.

Genus Epilobium, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 787.)

Epilobium (Schizostigma) *obcordatum*; glabrum, caulibus e rhizomate decumbente ramoso ascendentibus 6–8-poll. longis teretibus, internodiis brevibus, foliis pollicaribus oppositis patulis sessilibus v. breviter petiolatis orbiculari-ovatis subacutis obscure dentatis basi rotundatis saturate viridibus glaucis opacis, floribus magnis $1\frac{1}{4}$ poll. expansis in axillis supremis quasi corymbosis, alabastris nutantibus, pedicellis brevibus, ovario pruinoso, calycis tubo ultra ovarium producto infundibulari, lobis lineari-oblongis obtusis, petalis læte saturate roseis profunde bifidis patentibus, antheris flavis, stylo longe exserto declinato, stigmate 4-lobo purpureo lobis revolutis, capsulis 1–$1\frac{1}{2}$-pollicaribus linearibus robustis obtusis, seminibus minute papillosis.

E. obcordatum, *A. Gray in Proc. Am. Acad.* vol. vi. (1865) p. 532. *Wats. in King's Rep.* vol. v. p. 104. *Brew. & Wats. Bot. Calif.* vol. i. p. 218. *Barbey, Epilob.* t. 3. *Trelease in Second Report Missouri Bot. Gard.* p. 83, t. 6. *Hausskn. Monogr. Epilob.* p. 250, t. 15, f. 69. *Journ. Hortic.* Ser. 3, vol. xxvii. t. 179.

Epilobium obcordatum is decidedly the most attractive species of the genus in cultivation, if not in nature; and as a rock-garden plant it has few rivals. It is a native of the Sierra Nevada of California, at elevations of eight thousand to eleven thousand feet, from the Tulare County (the *Sequoia gigantea* region) in lat. 36° N., northward to the head waters of the Sacramento River, in 42° N. In company with Dr. Gray I found it in fruit in rocky places on Mt. Stanford, above Truckee, where the railroad crosses the Sierra Nevada, in September, 1877. It also inhabits the East Humboldt Mts. in Nevada. The capsules are described by all authors as clavate, but they are truly linear, and rather stout, previous to dehiscence, when the valves contract. The Royal Gardens, Kew, received a living plant of *E. obcordatum* in 1894, from H. Selfe Leonard, Esq., of Hitherbury, Guildford, which has flowered annually in the rock-garden in July.

Descr.—Quite glabrous. *Stems* six to eight inches high, ascending from a decumbent, branching rootstock, rather stout, terete, leafy. *Leaves* rather longer than the inter-

nodes, opposite, sessile, or sub-sessile, about an inch long, orbicular-ovate, sub-acute, obscurely toothed, deep green, opaque, base rounded. *Flowers* from the upper leaf axils, corymbosely arranged, an inch and a quarter in diameter, pedicels shorter than the rather stout pruinose ovary, which is produced at the top into a funnel-shaped limb. *Calyx-lobes* linear-oblong, dull red. *Petals* broadly ob-ovate, spreading, bright rose-coloured, deeply bifid. *Anthers* included, yellow. *Style* elongate, slender, decli-nate; stigma purple, lobes four, revolute. *Capsule* an inch and a half long, rather stout, obtuse. *Seeds* few.—*J. D. H.*

Figs. 1 and 2, Anthers; 3, top of style and stigmas; 4, ripe capsule, of *nat. size*; 5, seed:—*All but fig. 4 enlarged.*

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CONTENTS OF No. 650, FEBRUARY, 1899.

Tab. 7637.—GENTIANA BURSERI.
„ 7638.—ELÆAGNUS MACROPHYLLA.
„ 7639.—DENDROBIUM CAPILLIPES.
„ 7640.—CEANOTHUS INTEGERRIMUS.
„ 7641.—EPILOBIUM OBCORDATUM.

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Tab. 7642.

DRYANDRA calophylla.

Native of King George's Sound.

Nat. Ord. Proteaceæ.—Tribe Banksieæ.

Genus Dryandra, *Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 185.)

Dryandra (Aphragmia) *calophylla*; fruticulus depressus, caule petiolis costis foliorum subtus bracteis extus receptaculoque villis rubro-aurantiacis dense vestitis, caule brevi crasso, foliis pedalibus stellatim patentibus breviter petiolatis coriaceis linearibus pinnatifidis v. pinnatisectis, supra glabris nervis subtus sparsim rufo-villosis, pinnis lobisve 30–50 $\frac{1}{2}$–1$\frac{1}{2}$ poll. longis triangulari-ovatis ovato-lanceolatisve obtusis 3–5-nerviis inferioribus sensim minoribus, sinubus acutis v. obtusis, petiolo brevi basi incrassato, floribus in capitulum basi involucratum 2–3 poll. diam. congestis aureis, receptaculo longe villoso, involucri bracteis exterioribus elongatis foliaceis, interioribus parvis ovatis, perianthii 1$\frac{1}{4}$–1$\frac{1}{2}$ poll. longi tubo brevi angusto sericeo, lobis lineari-elongatis obtusis aureo-villosis, saepe rubro tinctis, antheris linearibus cuspidatis, ovario glabro, stylo perianthio longiore, stigmate elongato cylindraceo apice oblique truncato.

D. calophylla, *Br. Prodr. Suppl. I. Proteaceæ*, p. 40. *Meissn. in DC. Prodr.* vol. xiv. p. 481. *Benth. Fl. Austral.* vol. v. p. 583.

D. Drummondii, *Meissn. in Lehm. Pl. Preiss.* vol. ii. p. 267, *et in DC. l.c.*

The genus *Dryandra*, of which forty-seven species are described in Bentham's *Flora Australiensis*, is one of the most striking proofs of the endemic character of the Western Australian Flora, not a single species being found elsewhere in the Australian continent. Of these nine are enumerated in Aiton's "Hortus Kewensis,' as being in cultivation in the Royal Gardens in 1810, almost all of them raised from seeds collected in 1802-3 by Peter Good, the gardener who accompanied Brown on Flinder's voyage. None of these now exist at Kew. Nine species have previously been figured in this Magazine, the last, *D. nobilis*, tab. 4633, so early as 1852, an evidence of the decline of interest once taken in the cultivation of Australian plants.

D. calophylla was raised in the Royal Gardens, Kew, from seeds presented by Messrs. Veitch in 1893, and flowered in the Temperate House in May, 1898.

Descr.—A small depressed shrub. *Stem* very short, erect, or prostrate, thickly clothed with thick. bright,

orange-red, villous hairs, as are the petiole and rhachis of the leaves, the outer surface of the bracts and the receptacle. *Leaves* about a foot long, stellately spreading, linear, pinnatifid or pinnatisect, dark green above, pale beneath; lobes or pinnæ an inch long or less, triangular-ovate to ovate-lanceolate, obtuse, three- to five-nerved beneath, with the nerves loosely villous, sinus between the lobes obtuse or acute. *Inflorescence* a sessile bracteate head of flowers two to three inches in diameter, golden-yellow, outer bracts passing into leaves, inner very short, ovate, obtuse. *Flowers* densely crowded; perianth with a short, slender, silky tube, and four long, very narrow, obtuse, shaggy lobes, each bearing a linear, cuspidate, sessile anther on the inner face towards the tip. *Style* longer than the perianth-lobes, slightly thickened towards the tip, which is obliquely truncate.—*J. D. H.*

Figs. 1, 2, and 3, inner bracts of *nat. size*; 4, flower; 5, hairs of receptacle and ovary with three innermost bracts; 6, innermost bracts; 7, tip of perianth-lobe and anther; 8, section of ovary with ovules:—All but 1–3 *enlarged*.

1.

2.

Tab. 7643.

PASSIFLORA pruinosa.

Native of British Guiana.

Nat. Ord. Passifloreæ.—Tribe Eupassifloreæ.

Genus Passiflora, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 810.)

Passiflora (Granadilla) *pruinosa*; frutex glaberrimus, scandens, ramis teretibus fistulosis rufo-brunneis, foliis longiuscule petiolatis orbiculari-ovatis ad medium 3-lobis supra saturate viridibus subtus glaucis, nervis 5 rufescentibus, lobis ovato-oblongis v. lanceolatis acutis v. obtusis, petiolo subpeltatim affixo glandulis cupulatis sparso, stipulis magnis dimidiato-oblongis foliaceis, floribus 2½ poll. latis solitariis cum cirrho valido rufo-brunneo enatis, pedunculo 2-pollicari viridi, bracteis parvis ovato-lanceolatis acuminatis, calycis tubo brevi basi truncato, sepalis pollicaribus oblongis viridibus, petalis 5 oblongis obtusis pallide lilacinis, coronæ filamentis pluriseriatis infra medium in annulum intus glandulosum connatis, filis exterioribus infra medium violaceis apicibus cirrhosis, intimis brevioribus crassioribus apicibus dilatatis 3–4-lobis, gynophoro brevi cylindraceo, fructu? seminibus oblongis obtusis.

P. pruinosa, *Mast. in Gard. Chron.* 1897, vol. ii. p. 393, fig. 17.

A handsome evergreen stove climber, raised from seed sent to Kew in 1897 by Everard im Thurn, C.M.G., Government Agent, N.W. District, British Guiana, a gentleman well known for his many contributions to a knowledge of the natural history of his adopted country, and especially for his having accomplished the ascent of the previously unconquered precipitous table-mountain of Roraima; and also for his admirable description of the very peculiar vegetation of that mountain and of the surrounding district, which is published in the "Transactions of the Linnean Society" (Ser. II. Bot. ii. 249).

Passiflora pruinosa is a species of remarkably rapid growth, plants raised from seeds sent to the Royal Gardens in 1897, having flowered in September, 1898.

Descr.—A tall, stout, glabrous climber. *Branches* terete, fistular, red-brown; tendrils strong, red-brown. *Leaves* three to four inches in diam., orbicular-ovate in outline, five-cleft to the middle, dark green above, with five spreading pale nerves from the base, glaucous beneath, with red-brown nerves, lobes ovate-oblong or -lanceolate,

obtuse, acute, or acuminate; stipules foliaceous, one to two inches long, dimidiate-oblong, acuminate; petiole three inches long, sub-peltately attached, green, with a few scattered cupular glands. *Flowers* solitary, axillary, two and a half inches broad; peduncle shorter than the stipules, green; bracts small, lanceolate, acuminate. *Calyx-tube* short, cup-shaped, base truncate and intruded, lobes an inch long, oblong, obtuse, green, white within. *Petals* rather longer than the sepals, oblong, obtuse, reflexed, white, suffused with lilac. *Corona* longer than the petals, of several series of many spreading violet filaments, with white bases and cirrhose tips, all connate at the base in a membrane that is glandular within, innermost filaments stouter, with sub-clavate three- to five-lobed tips. *Gynophore* short, cylindric. *Anthers* large, yellow. *Ovary* oblong, styles and large globose stigmas streaked with red.—*J. D. H.*

Fig. 1, Longitudinal section of calyx-tube with portion of the corona; 2, base and innermost filaments of the corona:—*Both enlarged.*

2.
1.
3
4

Tab. 7644.

KNIPHOFIA Tuckii.

Native of Cape Colony.

Nat. Ord. Liliaceæ.—Tribe Hemerocalleæ.

Genus Kniphofia, *Moench*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 775.)

Kniphofia *Tuckii*; foliis dense rosulatis recurvatis linearibus acuminatis viridibus firmis acute carinatis margine serrulatis, pedunculo stricto erecto foliis breviore, racemo denso oblongo-cylindrico, floribus omnibus deflexis expansis sulphureis in statu juniore rubro tinctis, pedicellis brevissimis, bracteis oblongo-lanceolatis scariosis albidis, perianthio anguste infundibulari supra ovarium leviter constricto, lobis brevibus late ovatis, staminibus biseriatis omnibus distincte exsertis, stylo staminibus longiore.

K. Tuckii, *Baker in Gard. Chron.* 1893, vol. i. p. 68; *Fl. Cap.* vol. vi. p. 278.

This very distinct species of *Kniphofia* is a native of Colesberg, the central province of Cape Colony, all of which is at least four thousand feet above sea-level. It is allied most nearly to *K. pumila*, Kunth. (*Aletris pumila*, Gawl. in Bot. Mag. t. 764) a species which was early introduced into cultivation in this country, but is now lost. From this it differs by its more robust habit and broader leaves. It was collected for Mr. Max-Leichtlin by Mr. W. Tuck about 1892. The Kew plant, from which our drawing was made, was received from the Cambridge Botanic Garden in February, 1897, and flowered for the first time in the Temperate House in April, 1898.

Descr.—*Leaves* densely tufted, reflexed, linear, acuminate, above two feet long in cultivation, an inch broad low down, green on both surfaces, acutely keeled, firm in texture, serrulate on the margin. *Peduncle* moderately stout, stiffly erect, furnished with several erecto-patent rudimentary leaves. *Raceme* oblong-cylindrical, half a foot long, very dense; flowers all deflexed, sulphur-yellow when mature, tinged with crimson in an early stage; pedicels very short; bracts oblong-lanceolate, scariose, whitish. *Perianth* narrowly funnel-shaped, above half an inch long, slightly constricted above the ovary; lobes short, broadly

ovate. *Stamens* biseriate, all distinctly exserted, the three longest half as long again as the perianth. *Style* much overtopping the anthers. —*J. G. Baker*.

Fig. 1, Margin of leaf; 2, a flower, with pedicel and bract; 3, pistil:—*All enlarged*; 4, whole plant: *Much reduced*.

2
3
1
4.

Tab. 7645.

GYNOPLEURA humilis.

Native of Chili.

Nat. Ord. Passifloreæ.—Tribe Malesherbieæ.

Genus Gynopleura, *Cav.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 810.)

Gynopleura *humilis*; herba annua, humilis, gracilis, patentim ramosissima, foliosa, pubescens, foliis pollicaribus obovato-oblongis obtusis grosse crenato-serratis utrinque pubescentibus v. villosis, basi angustatis vix petiolatis pallide viridibus, floribus ad apices ramulorum subcorymbosis breviter pedicellatis ⅔ poll. diam., calycis sericeo-villosi tubo dilatato, lobis oblongis obtusis rubro striatis, petalis calycis lobis æquilongis late ovatis subacutis albis, corona faucem calycis coronante brevi crenata, gynophoro cylindraceo, filamentis elongatis, ovario ellipsoideo hirsuto.

G. humilis, *Roem. Syn. Pepon.* p. 211.

G. dilatata, *Walp. Rep.* vol. ii. p. 223.

Malesherbia humilis, *D. Don* in *Edinb. N. Phil. Journ.* 1831-2, p. 111. *Hook. et Arn. in Hook. Bot. Miscell.* vol. iii. p. 327. *C. Gay, Flor. Chilen.* vol. ii. p. 425.

M. dilatata, *Phil. f. Cat. Pl. Vasc. Chil.* p. 81.

The small genus *Gynopleura* inhabits the dry Sierras of Peru and Chili. *G. humilis* has a wide range in distribution, chiefly along the seaward ranges of the Andes, from the neighbourhood of Arica in S. Peru (lat. 18½° S.) to Concepcion in Chili (lat. 37° S.), and probably further in both directions. Even the desert of Atacama is not too dry for it. There it forms hemispherical masses a foot in diameter. Only one species has previously been figured from living specimens, namely *G. linearifolia*, Cav., tab. 3362 of this work, where it is described under the generic name of *Malesherbia*, with which *Gynopleura* had been confounded.

The plant here figured was raised from seeds sent to the Royal Gardens, Kew, from the Botanic Garden of Santiago in Chili, in 1898. It flowered in the herbaceous ground in September of the same year.

Descr.—A low growing, excessively branched, slender, leafy, pubescent or villous annual. *Leaves* about an inch long, obovate-oblong, obtuse, coarsely crenate-serrate, narrowed to the base, but hardly petioled, pale green,

villously pubescent with silky hairs on both surfaces. *Flowers* about two-thirds of an inch in diameter, corymbosely crowded at the tips of the branches, very shortly pedicelled. *Calyx tube* villously-hairy, funnel-shaped, membranous; lobes oblong, obtuse, white, streaked with purplish-red. *Corona* a very low, crenate membrane, surrounding the mouth of the calyx-tube. *Gynophore* much shorter than the calyx-tube, cylindric, glabrous. *Filaments* erect, very slender; anthers yellow. *Ovary* ellipsoid, hirsute; styles three, filiform, divergent, inserted on the sides of the ovary below its summit; stigmas small, dilated.—*J. D. H.*

Fig. 1, Flower laid open; 2 and 3, anthers; 4, ovary :—*All enlarged.*

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Tab. 7646.

ROSA ACICULARIS, *var.* NIPPONENSIS.

Native of Japan.

Nat. Ord. Rosaceæ.—Tribe Roseæ.

Genus Rosa, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 625.)

Rosa (Pimpinellifoliæ) *acicularis*; frutex erectus, ramosus, trunco setoso v. subinerme, ramis ramulis gracilibus pedunculisque setosis, foliis 2–4-pollicaribus, rhachi gracile setoso, foliolis ellipticis, stipulis oblongis, floribus solitariis gracile pedunculatis ebracteatis, calycis tubo oblongo, lobis anguste linearibus corollam æquantibus v. superantibus integerrimis tomentosis apicibus dilatatis, petalis sanguineo-roseis, fructibus ovoideis suberectis glaberrimis calycis laciniis conniventibus coronatis.

R. acicularis, *Lindl. Monog. Ros.* p. 44, t. 8. *C. A. Meyer in Mém. Acad. Sc. Pétersb.* Sér. 6, vol. vi. p. 15. *Regel in Act. Hort. Petrop.* vol. v. p. 54 & 525.

R. Gmelini, *Bunge in Ledeb. Fl. Altaic.* vol. ii. p. 228. *Bong. Veg. Saisang-Nor. Pl.* 33. *Fl. Ross.* vol. ii. p. 75. *Kavel. & Kiril. in Bull. Soc. Nat. Mosc.* (1841), p. 419. *C. A. Meyer, l.c.* p. 17.

R. alpina, *Pall. Fl. Ross.* vol. ii. p. 61 (*non Linn.*).

R. carelica, *Fries, Summ. Veg. Scand.* p. 171.

R. acicularis, *var.* β Gmelini, *Regel ex Maxim. in Herb. It. Secund.* (*nomen*).

Var. NIPPONENSIS; ramulis pedunculisque glanduloso-setosis.

R. nipponensis, *Crepin in Bull. Soc. Bot. Belg.* vol. xiv. (1875), p. 7, ***nomen in textu.***

Not being a specialist in the genus *Rosa*, I give my determination of the name and synonymy of the beautiful plant here figured with some hesitation. *Rosa acicularis* appears to me to be a high North European and North Asiatic plant, extending from Finland (*Rosa carelica*, Fries) through Siberia to Japan. *R. Gmelini*, Bunge, of Siberia, seems to be the same thing, or to differ only in the colouring of the under surface of the leaves. It has been confounded by De Candolle (Prodr. ii. 611) and others with *R. alpina*, L., of the Alps, Pyrenees, &c., of which it is the northern representative, and which is distinguished, amongst other characters, by its nodding oblong or ellipsoid fruits.

The var. *nipponensis* has no other character than the glandular prickles of the young branches and peduncles. These glandular prickles I find on Siberian specimens of

R. acicularis, and they are described by Fries as occurring in the peduncles of *R. carelica*.

Lindley's figure of *R. acicularis*, taken from a cultivated specimen, represents a plant with much larger and paler flowers than the Japanese specimen, or than the Finland one, which Fries describes as "sanguineo-rosei."

Seeds of this rose were received at the Royal Gardens, Kew, in 1894, from the Botanic Garden of Copenhagen, under the name of *R. nipponensis*. Plants raised from these flowered in June, 1898, and fruited in the following August. The name has been obligingly verified by Mr. Crépin. The only Japanese habitat in the Kew Herbarium is the mountain Fujiyama, in Nippon, collected by Tschonoski.

Descr. of var. *nipponensis*.—An erect bush, trunk naked or prickly; branches slender, and peduncles more or less covered with glandular bristles. *Leaves* two to four inches long, petiole short and slender, rhachis setulose, leaflets five to nine, rarely three, one half to two-thirds of an inch long, thin, elliptic, finely serrulate, pale green; stipules oblong, obtuse, entire. *Flowers* solitary, an inch and a half in diameter; peduncle very slender, one to one and a half inches long. *Calyx-tube* oblong, glabrous, lobes an inch long, very slender, linear, tips dilated, pubescent or tomentose, erect in fruit. *Petals* rather shorter than the calyx-lobes, deep rose-coloured. *Fruit* sub-erect, about three-fourths of an inch long, ovoid, smooth, crowned by the long connivent calyx-lobes.—*J. D. H.*

Fig. 1, Portion of peduncle; 2, stamen; 3, ovary; 4, ripe achene:—*All enlarged.*

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CONTENTS OF No. 651, MARCH, 1899.

TAB. 7642.—DRYANDRA CALOPHYLLA.
„ 7643.—PASSIFLORA PRUINOSA.
„ 7644.—KNIPHOFIA TUCKII.
„ 7645.—GYNOPLEURA HUMILIS.
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Tab. 7647.

IMPATIENS ROYLEI, *var.* PALLIDIFLORA.

Native of the Himalaya.

Nat. Ord. Geraniaceæ.—Tribe Balsamineæ.

Genus Impatiens, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 277.)

I. Roylei, *Walp. Rep.* i. 475. *Hook. f. Fl. Brit. Ind.* vol. i. p. 468.

I. glandulifera, *Royle Illustr. Bot. Himal.* p. 151, t. 28, f. 2 (*non Arn.*)

I. glanduligera, *Lindl. Bot. Reg.* 1840, t. 22. *Hook. Bot. Mag.* t. 4020.

Var. *pallidiflora*; elatior, 5–6-pedalis, foliis majoribus 6–8 poll. longis, floribus majoribus in corymbos amplos 6–10 poll. latos dispositis pallide roseis rubro maculatis.

The plant here figured may be assumed to be Himalayan, but of this I have no certain knowledge. It appeared for the first time in the shrubberies of my garden near Sunningdale three or four years ago, and rapidly increased, so as to become a weed, until 1898, when the long-continued drought decimated the plants, and prevented the seeding of the few that were spared. How or whence it was introduced I cannot form an idea. I have never raised an Indian Balsam in my garden, nor had I at that time received the seeds of any, and it is not in the Kew collection, or in that of other botanical gardens to which I have directed inquiries. On the other hand, I have seen it in several cottage gardens, one at Marlow being the nearest to my place (about fifteen miles in a straight line). Also I saw it growing in profusion in a cottage garden near Mr. Mitford's residence, Batsford Park, Worcestershire, but not a specimen of it was to be found in that gentleman's fine garden, or in his magnificent miscellaneous collection of hardy trees, shrubs, and herbaceous plants, where *I. Roylei* abounds in a naturalized state. In stature, foliage, inflorescence, flowers and fruit, my plant altogether agrees with one which I found in the upper valleys of the Sikkim Himalaya, and of which I made a coloured drawing on the spot, differing only in having subulate stipuliform glands, whereas in the Sikkim plant these are

flat or pulvinate. The latter I referred, on this account, to Wallich's *I. sulcata.**

Since the publication of the first volume of the "Flora of British India" in 1873, very large collections of Himalayan species of *Impatiens* have been received at Kew, which, together with those of the Herbaria of the Calcutta and Saharunpore Gardens, kindly lent by Messrs. Prain and Duthie, will, I hope, enable me to revise the species (124) published in that work, introducing some new ones, and correcting the characters and synonymy of others. Unfortunately the plants of this genus wither so rapidly after being gathered, and suffer so greatly from the pressure in transformation into Herbarium specimens, that a great many examples in all herbaria are quite insufficient for correct determination. Furthermore, fruiting specimens are essential, and it is only from living ones, or carefully executed drawings, that dependable characters can be obtained.

Descr.—Habit, foliage, inflorescence, flower and fruit of *I. Roylei*, but leaves larger, attaining eight inches in length, with petioles of the lower three to four inches long, corymbs of flower much larger, more spreading, sometimes ten inches in diameter, peduncles longer, and more robust, bracts and flowers larger, the latter very pale rose, speckled with dark red, especially on the standard and lip dorsally.—*J. D. H.*

* In "Fl. Brit. Ind." *I. gigantea*, Edgw., is referred to *I. sulcata*, erroneously, if the Sikkim plant is rightly named, for *I. gigantea* has, I find, elongated pods. Wallich's specimen of *I. sulcata* not being in fruit, the identification of the Sikkim plant with it is not sure.

Fig 1, Section of lower part of stem; 2, one wing petal; 3, stamens; 4, capsule; 5, seeds on placentas; 6, one cotyledon with plumule and radicle; 7, seed:—*All enlarged*, except 4, which is of *nat. size*.

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Tab. 7648.

CEREUS Paxtonianus.

Native of Brasil?

Nat. Ord. Cacteæ.—Tribe Echinocacteæ.

Genus Cereus, *Haw.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 819.)

Cereus (Colubrini) *Paxtonianus*; caule gracili columnari 5–6-gono flexuoso ad 1 poll. diam. parce ramoso luride viridi, costis compressis obtusis sinuatis vix lobatis, pulvillis subconfertis vix ¼ poll. distantibus parvulis glabris, aculeis 8–10 acicularibus radiantibus lævibus 2 interioribus longioribus inæquilongis longiore ¼ poll. longo, floribus amplis, 3–4 poll. diam., calycis tubo 2½ poll. longo cylindraceo ½ poll. diam. lævi glabro pallide viridi bracteolis paucis dentiformibus brunneis instructo, perianthii segmentis 4–5-seriatis patenti-incurvis lanceolatis subacutis exterioribus dorso viridibus brunneo marginatis et variegatis, interioribu albis, filamentis brevibus, antheris minutis, stylo valido exserto, stigmatibus 12 linearibus fere ½ poll. longis obtusis radiantibus.

C. Paxtonianus, *Monv. ex Salm-Dyck, Cact. Hort. Dyck*, Ed. II. p. 211. *Foerst. Handb. Cact.* p. 727. *Labouret, Monogr. Cact.* p. 371. *K. Schumann, Gesam. Beschr. der Kakteen*, p. 135.

C. Cavendishii, *Monv. l. c. Rev. Hortic.* 1857, p. 521.

The name *Cereus Paxtonianus* first appeared in Monville's trade catalogue of *Cacteæ*, from which it was taken up by Prince Salm-Dyck, together with *C. Cavendishii*, which was assumed to be a different species. Of course both came from the magnificent collection of the Duke of Devonshire at Chatsworth, of which Mr. (afterwards Sir Joseph) Paxton was the keeper, whence the names. Their native country was and is unknown. Differing a little in habit and colour, they came to be regarded as different species, and it was many years before either flowered; and until *C. Paxtonianus* did so at Kew, *C. Cavendishii* alone had done so. The flower of the latter is briefly described in the "Revue Horticole," 1857, p. 521, and the description precisely accords with that of the plant here figured. Schumann was the first to unite the two plants under the one name.

The specimen here figured of *Cereus Paxtonianus* was purchased for the Royal Gardens, Kew, from Mr. A. Benecke, dealer in *Cacti*, &c., Birkenwerder, near Berlin,

in whose catalogue it appears as "*C. Paxtonianus*, Monv., Syn. *C. Cavendishii*, Monv." It flowered for the first time in the Cactus House in September, 1898.

Descr.—*Stem* of the Kew specimen four feet high, and about an inch in diameter, erect, flexuous, branching towards the top, five to six angled, very lurid green, angles compressed, sinuate, studded with spine-bearing pulvilli at intervals of about a quarter of an inch, the larger spines of which cross one another. *Pulvilli* glabrous, bearing about twelve radiating, smooth, straight, dark brown spines of unequal length, two of which are more than twice as long as the others, the longest being about a quarter of an inch long. *Flowers* three to four inches in diameter, white. *Calyx-tube* two and a half inches long by about half an inch in diameter, cylindric, funnel-shaped below the sepals, quite smooth, unarmed, pale bright green, bearing few distant minute brown tooth-like scales, which become much longer upwards passing into the outer sepals. *Perianth-segments* very many, in several series, linear-lanceolate, sub-acute, spreading and incurved; outer segments (sepals) dorsally green, edged, and clouded towards the tip, and sometimes on the inner surface also with light brown, inner segments (petals) quite white. *Stamens* very numerous, many-seriate, filaments slender, shortly exserted at the mouth of the perianth, anthers minute, yellow. *Style* stout, much longer than the stamens, bearing a dozen linear obtuse stout, radiating stigmas, about half an inch long.—*J. D. H.*

Fig. 1, Pulvillus with spines; 2, summit of style and stigmas:—*Both enlarged.*

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Tab. 7649.

SILENE Fortunei.

Native of China and Formosa.

Nat. Ord. Caryophyllaceæ.—Tribe Sileneæ.

Genus Silene, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 147.)

Silene (Italicæ) *Fortunei*; perennis, erecta, basi suffruticosa, caulibus 1–3-pedalibus numerosis apices versus viscosis gracilibus foliosis inferne puberulis, foliis 1–2½ pollicaribus saepissime patenti-recurvis linari-oblanceolatis subacutis acuminatisve, basi angustatis ciliolatis v. in petiolum brevem desinentibus enerviis costa impressa, panicula ampla, floribus erectis oppositis v. ad apices ramorum ternis breviter pedicellatis, pedicellis ad ½-pollicaribus infra medium **bibracteolatis**, bracteolis parvis linearibus obtusis, calycis tubo **1¼-pollicari angusto cylindraceo striato** basi rotundato fructifero supra medium inflato, dentibus parvis erectis ovatis albo-marginatis et ciliolatis, petalis albis v. roseis, **ungue supra** medium dentata, lamina flabelliformi ¾ poll. longa bifida basi utrinque lacinia lineari quasi auriculata, lobis multifidis, antheris brevibus exsertis, gynophoro elongato capsula oblonga bis longiore, capsulæ dentibus recurvis, seminibus tuberculatis dorso canaliculatis ventne planis.

S. Fortunei, *Vis. Ind. Sem. Hort. Patav.* (1847), *ex Linnæa*, vol. xxiv. (1851) p. 181. *Rohrb. Monogr. Silene*, p. 222. *Maxim. Fl. As. Or. Fragm.* p. 6. *Franch. Pl. David.* pars i. p. 47. *Forbes et Hemsl. in Journ. Linn. Soc.* vol. xxiii. (1886) p. 65. *Williams in Journ. Linn. Soc.* vol. xxxii. (1896) p. 178.

S. fissipetala, *Turcz. in Bull. Soc. Nat. Mosc.* vol. xvii. (1854) pars II. p. 371.

? S. sinensis, *Hook. ex Bosse, Handb. Blumengart.* Ed. 2, vol. ii. p. 371, *ex Williams l.c.*

? S. chinensis, *Hook. ex Rossi, l. c.* Ed. 3, vol. iii. p. 445.

Lychnis Fortunei, *Hort.*

Silene Fortunei appears to be a common plant in China, where it was first found by Fortune. It also occurs in the Island of Formosa, on sandy downs near Tamsing. One of its nearest allies in the great genus *Silene* (numbering 390 species in Mr. Williams' excellent monograph in the Linnæan Journal) is the West European *S. italica*, a denizen of some southern English counties. With regard to the authority "Hook." given by Bosse for his *S. sinensis* or *chinensis*, Mr. Williams has suggested to me that it is possibly an error for Hort. It is a garden name not introduced into the Index Kewensis.

The plant here figured was raised from seeds collected in

the Province of Shensi by Father Piccoli, of the Jesuit Mission in Hankow, which were received at the Royal Gardens through George Murray, Esq., F.R.S., Keeper of the Botanical Department of the British Museum. It flowered in the Herbaceous collection in September, 1898.

Descr.—An erect, nearly glabrous, slender perennial, one to three feet high, branching and puberulous below, above and flowering branches very viscid. *Leaves* one to two and a half inches long, spreading and recurved, linear-oblanceolate, sub-acute or acuminate, nerveless, midrib deeply impressed above, base ciliate, contracted sometimes into a very short petiole. *Flowers* erect, in rather large panicles with opposite erecto-patent branches, in axillary pairs, or ternate at the tips of the branches; pedicels about half an inch long, with two small opposite linear obtuse bracteoles below the middle. *Calyx* an inch and a quarter long; tube narrow, cylindric, striate with close-set nerves, when fruiting inflated above the middle, base rounded; teeth small, erect, ovate, obtuse, margins white, ciliolate. *Petals* white or rose-red, claw rather broad, margins toothed; limb fan-shaped, half an inch long or more, bifid, base with a long linear segment on each side; lobes unequally lacerate. *Anthers* shortly exserted, broadly oblong. *Gynophore* twice as long as the capsule, slender, glabrous. *Styles* three, very short. *Seeds* oblong, flat on one surface, tubercled on the other.—*J. D. H.*

Fig. 1, Calyx-tube laid open with gynophore and ovary; 2, petal and stamen; 3, stamen:—*all enlarged*; 4, calyx and ripe capsule, *nat. size*.

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M.S. del. et lith.

Vincent Brooks Day & Son Lith. to the Queen

Tab. 7650.

YUCCA ELATA.

Native of the South-Western United States.

Nat. Ord. Liliaceæ.—Tribe Dracæneæ.

Genus Yucca, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 778.)

Yucca *elata*; caule fruticoso interdum furcato, foliis dense rosulatis linearibus strictis pallide viridibus pungentibus margine copiose filiferis, pedunculo foliis subduplo longiore, racemis multis laxis in paniculam densam rhomboideam dispositis, bracteis ovato-lanceolatis scariosis pedicellis longioribus, perianthio amplo albo extus leviter viride tincto, staminibus perianthio subtriplo brevioribus filamentis pubescentibus, stylo brevi columnari pubescente, fructu magno oblongo coriaceo tarde dehiscente, seminibus discoideis nigris.

Y. elata, *Engelm. in Coult. Bot. Gaz.* vol. vii. (1882) p. 17; *Collected Works.* p. 299. *Sergeant in Garden & Forest*, 1889, p. 568, fig. 146. *Trelease in Report Missouri Gard.* 1893, p. 201, tab. 10, 15, 22.

Y. angustifolia *var.* elata, *Engelm. Notes on Yucca*, p. 50. *S. Wats. in Proc. Amer. Acad.* vol. xiv. p. 253.

Y. constricta, *Baker in Journ. Linn. Soc.* vol. xviii. p. 229, *non Buckley.*

This shrubby *Yucca* is peculiar to the desert region of Arizona and the neighbouring states west of the Rocky Mountains. In the wild state the stem reaches a length of ten or twelve feet. In leaf and flower it closely resembles *Y. angustifolia*, Pursh (Bot. Mag. tab. 2236), but that is more hardy, and never has a long stem. The peduncle of the present plant is longer, and the inflorescence much more compound. It was first discovered by the botanists of the Mexican boundary survey more than thirty years ago, but has only lately been introduced into cultivation. The plant in the Royal Gardens, Kew, from which the present drawing was made, is growing in the large Temperate House, and flowered for the first time in the summer of 1896. It was purchased, along with other Yuccas, in 1893, from Mr. J. N. Gilcrease, of Sierra Blanca, Texas.

Descr.—*Trunk*, of the Kew plant, about a yard long, forked at the top, covered down to the base with reflexed withered leaves. *Leaves* densely rosulate, stiffly erect or

spreading, linear from a suddenly-dilated base, one and a half or two feet long, pale green, pungent, copiously filiferous on the margin. *Peduncle* twice as long as the leaves, furnished with copious spreading, linear bracts leafy. *Inflorescence* an ample, dense, rhomboid panicle; racemes lax, the lower six or nine inches long; pedicels in pairs, articulated at the apex; bracts ovate-lanceolate, scariose, longer than the pedicels. *Perianth* white, two inches long, hardly at all tinged with green on the outside when mature. *Stamens* one-third the length of the perianth; filaments pubescent. *Ovary* with a short, pubescent, columnar style. *Capsule* oblong, coriaceous, two inches or more long, finally dehiscent. *Seeds* large, black, discoid.—*J. G. Baker.*

Fig. 1, Stamen; 2, pistil, *both enlarged*; 3, whole plant, *much reduced.*

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T.S. del. J.N. Fitch lith.

Vincent Brooks Day & Son Ltd. Imp

Tab. 7651.

INCARVILLEA variabilis.

Native of Western China.

Nat. Ord. Bignoniaceæ.—Tribe Tecomeæ.

Genus Incarvillea, *Juss.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1049.)

Incarvillea *variabilis*; perennis, caule gracili erecto ramoso angulato folioso glabro v. puberulo, foliis omnibus alternis, ambitu ovatis pinnatis, foliolis oppositis ovato-lanceolatis pinnatifidis pinnatisectisve incisis, floribus in racemos graciles dispositis breviter pedicellatis, pedicellis basi foliolo tripartito bracteatis, calycis brevis tubo obconico pentagono, lobis brevibus in tuberculos crassos globosos seta valida scabrida instructos desinentibus et cum lobulis late ovatis membranaceis alternantibus, corollæ tubo pollicari infundibulari, limbi 1–1¼ poll. lati lobis rotundatis patenti-recurvis, staminodiis 0, stigmatis lobis orbiculatis, capsula bipollicari anguste fusiformi utrinque altenuata terete ternuiter coriacea, seminibus ala hyalina cinctis.

Incarvillea variabilis, *Batalin in Act. Hort. Petrop.* vol. xii. (1892) p. 177, et vol. xiv. (1895) pp. 178, 180.

Of the beautiful genus *Incarvillea* only one species was known in 1876, the date of the publication of the third part of vol. ii. of the "Genera Plantarum;" since which time, so great has been the influx of new plants from Western China and Eastern Tibet, that Dr. Batalin enumerates nine species from Eastern Tibet and China alone, in a paper published three years ago in the "Acta" of the Imperial Botanical Gardens of St. Petersburg. Amongst these is his *I. variabilis*, a well-named species, of which he enumerates 4 varieties, distinguished chiefly by the amount of the division of the leaves, and the form of their segments. With none of these varieties does the plant here figured perfectly accord, whilst approaching nearest to var. γ *fumariæfolia*, itself a protean form in foliage as the suite of authentically named specimens in the Kew Herbarium demonstrates. From this the plant here figured differs in the shorter, more equally pinnate leaves, with the leaflets much shorter, broader, and more uniform in shape and incision. The curious character of the setiform or horned calyx-lobes, each lobe seated on a large tubercle, is common to several species. *I. variabilis* is remarkable in having no trace of a staminode between

the shorter stamens, in either the cultivated or wild specimens.

I. variabilis was discovered by Mr. Potanin on the mountains of the Chinese provinces of Szechuen and Kansu. A yellow-flowered variety is described by Mr. Batalin as inhabiting the valley of the Po-ho river in Eastern Tibet. The Royal Gardens received seeds of *I. variabilis* from Mr. W. Thompson of Haslemere, Ipswich, plants from which flowered in the Herbaceous ground in August, 1898. Its nearest ally is *I. sinensis*, Lamk., which has smaller flowers and a much larger pod.

Descr.—A slender, perennial, glabrous, or faintly pubescent herb, twelve to eighteen inches high. *Leaves* all alternate, two to four inches long, shortly petioled, ovate in outline, pinnate; leaflets six to eight pairs, opposite, shortly petiolulate, ovate-lanceolate, pinnatifidly cut into obtusely toothed pinnules. *Flowers* in loose, erect racemes, shortly pedicelled, with a tripartite leafy bract at the base of each pedicel. *Calyx* small, tube obconic, five-angled, lobes setiform, as long as the tube, scabrid, seated on a globose tubercle, alternating with as many short, membranous teeth. *Corolla* bright rose-purple, tube an inch long, slightly curved, limb more than an inch across the orbicular spreading and recurved lobes. *Follicle* an inch long, narrowly fusiform, acuminate. *Seeds* surrounded with a hyaline wing.—*J. D. H.*

Fig. 1, Calyx, style, and stigma; 2, portion of calyx laid open, showing disk and ovary; 3, portion of corolla laid open and stamens; 4, anther :—*All enlarged.*

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CONTENTS OF No. 652, APRIL, 1899.

TAB. 7647.—IMPATIENS ROYLEI.
„ 7648.—CEREUS PAXTONIANUS.
„ 7649.—SILENE FORTUNEI.
„ 7650.—YUCCA ELATA.
„ 7651.—INCARVILLEA VARIABILIS.

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Tab. 7652.

NICOTIANA sylvestris.

Native of Argentina.

Nat. Ord. Solaneacæ.—Tribe Cestrineæ.

Genus Nicotiana, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 906.)

Nicotiana *sylvestris*; herba elata, robusta, foliosa, ramosa, glanduloso-puberula, foliis pedalibus amplis omnibus basi cordatis semi-amplexicaulibus lyrato-obovatis-oblongisve obtusis v. cuspidatis costa crassa, nervis patulis subtus prominulis, inflorescentia subcapitata, e cymis brevibus fasciculatis multifloris subsessilibus composita, floribus breve pedicellatis nutantibus, calyce ovoideo 5-fido basi rotundato, lobis tubo brevioribus erectis inæqualibus lanceolatis ovatis v. triangularibus, corollæ albæ tubo gracili 3-pollicari tereti glanduloso-puberulo medium versus paulo inflato, limbi $1\frac{1}{2}$ poll. lati lobis triangularibus obtusiusculis patenti-recurvis, filamentis medio tubi insertis filiformibus glabris, antheris vix exsertis oblongis, capsula corolla paulo longiore.

N. sylvestris, *Spegaz. et Comes in Gartenflora* (1898) p. 130, fig. 38.

Nicotiana sylvestris belongs to the group of tall herbaceous species that abound in South America, but amongst which I find none with the characters above described. In foliage it closely resembles *N. tomentosa*, Ruiz & Pav., figured at tab. 7252 of this work, but in inflorescence and flowers it entirely differs.

N. sylvestris is a native of the Province of Salta, a country of lofty mountains with fertile valleys, on the confines of Bolivia, in lat. 26° S., where it grows at an elevation of 5000 to 6000 feet above the sea. Seeds were received at the Royal Gardens, Kew, from Messrs. Dammann & Co. of Naples, in 1898, plants raised from which flowered in the herbaceous collection in August of the same year.

Descr.—A tall, stout, branching, closely leafy, glandular-puberulous herb, five feet high. *Leaves* a foot long and upwards, lyrate-obovate from a cordate semi-amplexicaul base two inches broad, cuspidate, upper part six inches broad, dark green above, paler beneath, midrib very stout, and spreading nerves prominent beneath. *Inflorescence* terminal, peduncled, almost hemispheric, formed of sub-

sessile fascicles of short, many- and dense-flowered nodding cymes, two to three inches long, flowering to the base; pedicels shorter than the calyces, except the lowest in the cyme. *Calyx* one-half to two-thirds of an inch long, ovoid, terete, cleft to about one-third into five, unequal, broad or narrow, erect lobes. *Corolla* white, tube three inches long, very slender, terete, glandular-pubescent, slightly inflated about the middle; limb an inch and a half broad, of five triangular, sub-acute, spreading and recurved lobes. *Stamens* inserted where the inflation of the corolla-tube commences; filaments very slender, glabrous; anthers oblong, tips hardly exserted from the mouth of the corolla. *Style* very slender, glabrous, stigma included. *Capsule* four-toothed.—*J. D. H.*

Fig. 1, Calyx and style; 2, portion of corolla-tube and stamens; 3, immature capsule; 4, calyx and capsule:—*All enlarged.*

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M.S. del. J.N. Fitch lith

Tab. 7653.

CYRTANTHUS PARVIFLORUS.

Native of Cape Colony.

Nat. Ord. AMARYLLIDEÆ.—Tribe AMARYLLEÆ.

Genus CYRTANTHUS, *Ait.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 729.)

CYRTANTHUS (Monella) *parviflorus*; bulbo globoso tunicis membranaceis supra collum productis, foliis 3–6 linearibus viridibus suberectis floribus coætaneis facie canaliculatis, scapo gracili tereti elongato, umbellis 6–12-floris, pedicellis flore æquilongis vel brevioribus, spathæ valvis 2 parvis oppositis lanceolatis, floribus inodoris splendide rubris, perianthii tubo subcylindrico curvato ad basin attenuato, lobis brevissimis late ovatis, staminibus biseriatis filamentis brevissimis, stylo perianthio æquilongo apice stigmatoso tricuspidato.

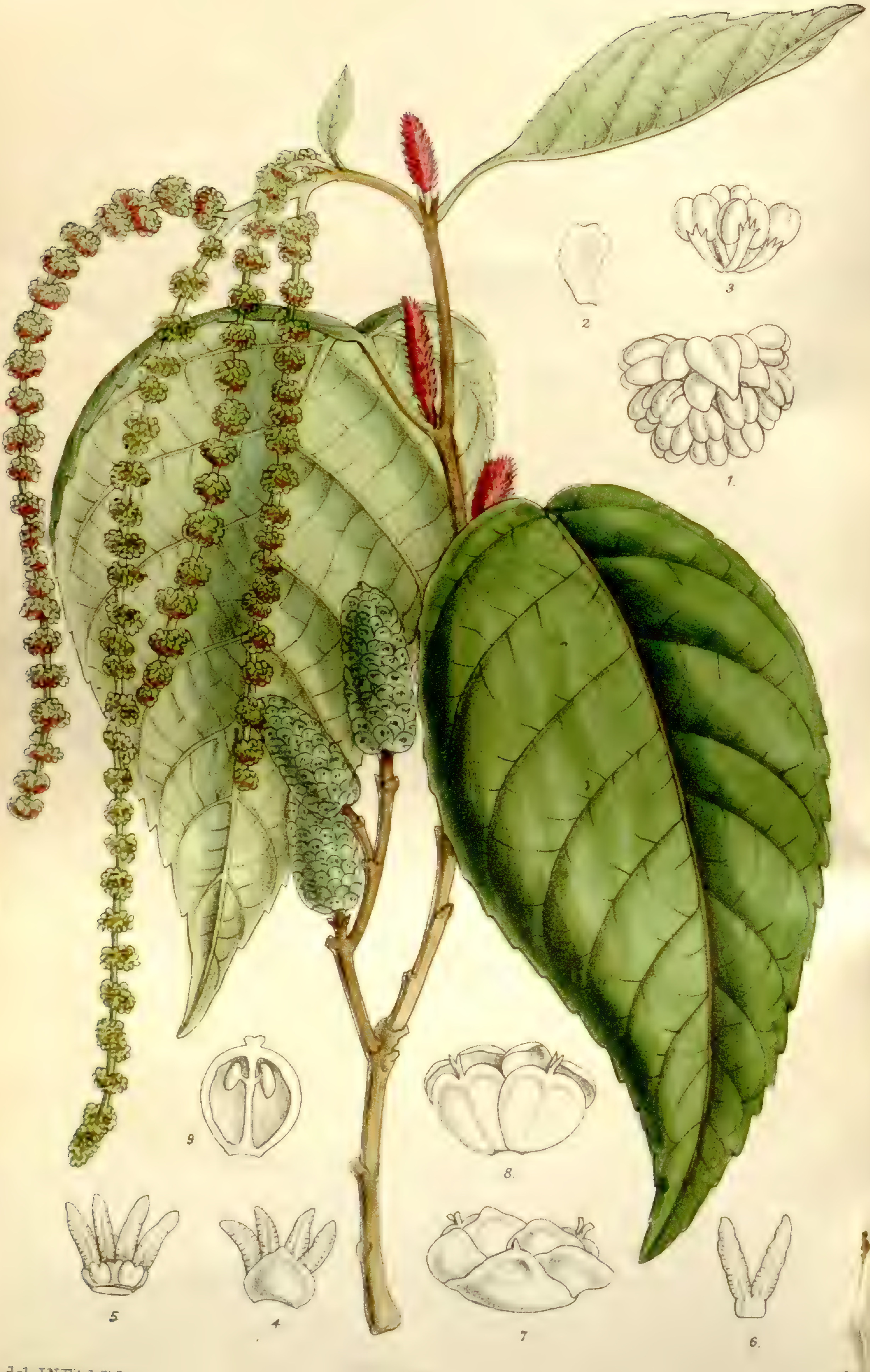
C. parviflorus, *Baker in Gard. Chron.* 1891, vol. i. p. 104; *et in Dyer Fl. Cap.* vol. vi. p. 221.

This pretty little *Cyrtanthus* was first introduced into cultivation by Mr. James O'Brien of Harrow, in 1889. In a wild state it is widely distributed through the eastern provinces of Cape Colony, from Port Elizabeth northward to the Transvaal, where Mr. E. Galpin has found it at an altitude of 4500 feet above sea-level. It is nearly allied to the well-known *C. angustifolius*, Ait. (Bot. Mag. t. 271), but the flowers are much smaller and brighter in colour. It flowers freely in a cool house at Kew in April and May. The bulbs were presented to the Royal Gardens by E. H. Woodall, Esq., of St. Nicholas House, Scarborough.

Descr.—*Bulb* globose, about an inch in diameter, with the outer brown, membranous tunics produced some distance above its neck. *Leaves* three to six to a bulb, contemporary with the flowers, linear, sub-erect, green, channelled down the face. *Peduncle* slender, terete. *Flowers* inodorous, bright red, six to twelve in an umbel; pedicels as long as, or shorter than the flowers; spathe-valves two, small, opposite, lanceolate. *Perianth* sub-cylindrical, curved, about an inch long, narrowed to the base; lobes very small, broadly ovate. *Stamens* inserted

in two rows above the middle of the perianth-tube; filaments very short. *Style* reaching to the tip of the perianth, distinctly tricuspidate at the stigmatose apex. —*J. G. Baker.*

Fig. 1, A flower opened out to show the stamens; 2, back view of anther; 3 front view of anther; 4, pistil:—*All enlarged.*



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C.S. del. J.N. Fitch lith.

Tab. 7654.

ALNUS nitida.

Native of the Western Himalaya.

Nat. Ord. Cupuliferæ.—Tribe Betuleæ.

Genus Alnus, *Gærtn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 404.)

Alnus (Clethropsis) *nitida*; arbor elata, ramulis brunneis novellis puberulis, foliis ovatis v. ovato-lanceolatis acuminatis integerrimis v. crenato-serratis glaberrimis læte viridibus lucidis basi rotundatis v. cuneatis subtus pallidioribus punctulis resiniferis notatis, axillis nervorum barbellatis, infl. masc. et fem. coætaneis, spicis masc. apices versus ramulorum solitariis v. paucis elongatis filiformibus puberulis, floribus glomeratis bracteatis minutis tetrandris, sepalis 4 obovatis apicibus dentatis, spicis fem. 1–2-pollicaribus axillaribus solitariis binisve erectis breviter pedunculatis florentibus sanguineis maturis oblongis obtusis viridibus, bracteis minutis arcte imbricatis, bracteolis quadrifidis demum in laminam 4-fidam stipitatam connatis, ovariis minimis orbicularibus compressis, stylis 2 linearibus obtusis complanatis, nuculis orbicularibus obcordatisve stylis coronatis marginibus incrassatis.

A. nitida, *Endl. Gen. Pl. Suppl.* iv. pars II. p. 20. *Regel in DC. Prodr.* vol. xvi. pars I. p. 181, *et Monogr. Bet.* p. 82, t. 14, fig. 23-30. *Brand. For. Flor.* p. 460, t. 57. *Gamble Man. Ind. Timbers*, p. 373. *Hook. f. Fl. Brit. Ind.* vol. v. p. 600.

Clethropsis nitida, *Spach in Ann. Sc. Nat.* Sér. II. vol. xv. p. 202; *et in Jacquem. Voy. Bot.* p. 158, t. 159.

The Western Himalayan Alder (*A. nitida*) is a very handsome tree, that does not occur east of the Sutlej river, but extends from thence westward, at elevations of 4000 to 9000 ft., to Kashmir and Afghanistan. In the Eastern Himalaya it is replaced by *A. nepalensis*, Don, which, commencing from a little westward of the Sutlej (in Chamba) extends thence throughout the range to Burma and Western China. It has not as yet been introduced into England. The wood of *A. nitida* is used in the manufacture of bedsteads, and the lithe branches form ropes for the construction of suspension bridges, and for tying loads of wood. The bark is used for dyeing and tanning purposes.

Seeds of *A. nitida* were sent to the Royal Gardens, Kew, together with those of many other western Himalayan plants, by the late R. Ellis, Esq., of the Forest Department, from Pangi, in 1882, from which the plant here

figured was raised. It flowered in the Arboretum in September, 1897.

Descr.—A tall, fast-growing, deciduous tree, attaining a hundred feet in height, with a trunk ten to fifteen feet in girth, covered with rough brown furrowed bark; wood soft, reddish. *Leaves* four to five inches long, ovate, acuminate, entire or serrate, bright green, and polished above, pale beneath, nerves eight to ten pairs, arched; petiole about an inch long, slender. *Male* and fem. inflorescence cretaneous. *Male spikes* solitary or few, towards the tops of the branchlets, shortly peduncled, four to six inches long, very slender, pendulous. *Flowers* small, in globose clusters, surrounded by minute green bracts; perianth-scales four, obovate, tips toothed. *Stamens* four, anthers didymous, red. *Fem. spikes* axillary, and at the base of the males, one to two inches long, sub-sessile, strict, linear, blood-red. *Flowers* minute, in broad, short, imbricating bracts; bracteoles four, orbicular, which eventually coalesce, and are raised on a hardened stipes. *Ovary* very minute, orbicular, compressed, with two linear, flattened stigmas. *Nutlets* orbicular or obcordate, crowned with the persistent stigmas.—*J. D. H.*

Fig. 1, Clusters of male fl.; 2, bracteole; 3, male fl. and sepals; 4, fem. flowers and bract; 5, two fem. fl., 6, a fem. fl.; 7, young fruit in bracts; 8, nutlets; 9, connate bracteoles; 10, longitudinal section of nutlet:—*All greatly enlarged.*

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M.S. del. J.N. Fitch lith

Vincent Brooks Day & Son lith

Tab. 7655.

DAHLIA Maximiliana.

Native of Mexico.

Nat. Ord. Compositæ.—Tribe Helianthoideæ.

Genus Dahlia, *Cav.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 386.)

Dahlia *Maximiliana*; elata, ramosa, caule fistuloso? lenticellato, foliis plerisque bipinnatis superioribus pinnatis v. 3-foliolatis, summis interdum unifoliolatis, petiolo gracili inferiorum fistuloso, foliolis paucis 3–5-poll. longis sessilibus v. graciliter petiolulatis ovatis ovato-oblongisve acutis acuminatis caudatisve grosse serratis basi acutis obtusis v. repente angustatis et in petiolulum decurrentibus glabris v. utrinque puberulis, terminali paullo majore oblongo sessili v. (interdum longe) petiolulato, floribus in axillis superioribus solitariis et ad apices ramulorum subcorymbosis, pedunculis elongatis gracilibus, capitulis ad 3-poll. latis, involucri bracteis exterioribus 5–7 herbaceis lineari-oblongis patentibus tortis 3-nerviis basi tumidis, interioribus erectis oblongis submembranaceis obtusis acutisve, fl. radii ad 8 tubo brevi puberulo, limbo elliptico obtuso multinervi roseo-purpureo, disci floribus aurantiacis.

D. Maximiliana, *Hort. in Gard. Chron.* 1879, vol. i. p. 216; *Hemsl in Gard. Chron.* 1879, vol. ii. p. 525, *et Biolog. Cent. Am. Bot.* vol. ii. p. 197.

The earliest notice which I find of this plant is that specimens of it were exhibited at a show of the Royal Horticultural Society in February, 1879, by Mr. Green, gardener to Sir George Macleay, K.C.M.G., of Pendel Court, Bletchingly. There are excellent specimens, communicated by Sir George, preserved in the Herbarium at Kew. As stated in the *Gardener's Chronicle* of that date, it attains eight feet in height, four feet in diameter, and blooms for a long time. This was followed by Mr. Hemsley's notice of the plant as *D. Maximiliana*, Hort., in October of the same year, in his account of the known species of *Dahlia*, with the observations that the stem, seven feet high, is lenticellate, the leaves bipinnate, with relatively slender petioles, and the flowers unknown. In December of the following year I received some flowers of it as *D. Maximiliana*?, from E. H. Woodall, Esq., of St. Nicholas House, Scarborough, with the information that the plant producing them was eight feet high, had excited great admiration, from the delicate mauve colour of its anemone-like flowers, and that, as it

succeeds the chrysanthemum, it should prove a valuable addition to winter-flowering conservatory plants. Up to the present time there has been no description of the species but that I here give. Of the origin or introduction of the species I have found no record. It is regarded as Mexican, probably correctly, as that country is the head-quarters of the genus.

As a species it is difficult to assign to *D. Maximiliana* botanical characters that would by words distinguish it from some of the forms of the common *D. variabilis*, Desf., than which it is a very much larger plant, with a more branching fistular ? stem ; the foliage more resembles that of *D. imperialis*, but is less divided, and with comparatively slender petioles. The flowers are totally unlike those of *D. imperialis*, and, except in the lovely colour, resemble those of *D. variabilis*.

The specimen from which the accompanying figure was made was kindly sent in February of this year (along with other interesting plants to be figured in this work) by Commendatore Hanbury, F.L.S., from his unrivalled garden at Palazzo Orengo, La Mortola, Ventimiglia.

Descr.—*Stem* six to eight feet high, copiously branched, fistular, glabrous, green, lenticellate ; branches long, spreading, leafing and flowering. *Leaves* spreading, lower two to three feet long, bipinnate, with slender, fistular petioles, and few sessile or petiolulate leaflets, one to three inches long ; leaflets few, ovate, or oblong-ovate, coarsely serrate, from acute to caudate-acuminate, thin, glabrous or puberulous on both surfaces, terminal rather the largest, oblong, base rounded, obtuse, or acute, or suddenly narrowed and decurrent on the petiole. *Flowers* copiously produced in the axils of the upper leaves, and in loose corymbs terminating the main stem and branches. *Involucre*, *ray*, and *disk*-florets as in *D. variabilis*, with rays of a lovely mauve colour.—*J. D. H.*

Fig. 1, Inner involucral bract and disk flower ; 2, ovary, tube, and part of the corolla with style of a ray-flower ; 3, stamens :—*All enlarged.*

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TAB. 7656.

VERONICA DIEFFENBACHII.

Native of the Chatham Islands.

Nat. Ord. SCROPHULARINEÆ.—Tribe DIGITALEÆ.

(Genus VERONICA, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 964.)

VERONICA (Hebe) *Dieffenbachii*; frutex glaber v. puberulus, ramosus, ramis elongatis divaricatis teretibus viridibus, foliis 3–4-pollicaribus sessilibus patenti-recurvis lineari-oblongis acutis coriaceis enerviis basi late cordatis semiamplexicaulibus costa valida marginibus recurvis supra lævibus subtus pallidis, racemis axillaribus oppositis foliis æquilongis breviter pedunculatis cylindraceis obtusis densifloris, rhachi robusto viridi, floribus parvis, pedicellis ad $\frac{1}{8}$ poll. longis basi bracteis minutis ovatis instructis, sepalis $\frac{1}{10}$ poll. longis ovata oblongis obtusis ciliolatis, corollæ lilacinæ tubo calyce duplo longiore, limbi $\frac{1}{4}$ poll. lati lobis lateralibus et dorsali orbiculatis, antico minore, filamentis corollæ lobis paullo longioribus, antheris oblongis cæruleis, stylo brevi, capsulis parvis ovatis obtusis dorso compressis, seminibus orbiculatis plano-convexis.

V. Dieffenbachii, *Benth. in DC. Prodr.* vol. x. p. 459. *Hook. f. Fl. Nov. Zel.* vol. i. p. 191; *Handb. Fl. N. Zeal.* p. 206. *F. Muell. Vegetation of Chatham Islds.* (sub V. salicifolia) p. 45. *Armstrong in Trans. N. Zeal. Instit.* vol. xiii. (1880) p. 351. *Kirk, l. c.* xxviii. (1895) p. 531. *Gard. Chron.* 1898, vol. ii. p. 154, fig. 41.

A very handsome and well-marked, shrubby Speedwell, confined to the Chatham Islds., where it was discovered by Dr. Dieffenbach, the first naturalist who visited that interesting dependency of New Zealand, now nearly sixty years ago. As a species it stands between *V. speciosa*, R. Cunn. (see tab. 4057), and *V. macroura*, Hook. f. (a plant not hitherto figured), and, as I have observed in Fl. Nov. Zel., it quite resembles what a cross between these two species might yield. The only indigenous specimen that I have seen is Dieffenbach's in Herb. Kew, and I have no other information as to the habit of the plant in its native country than an observation by Kirk, in his enumeration of the N. Zealand species of *Veronica*, in the "Transactions of the New Zealand Institute," who says of it, "The rather stout branches are given off in a divaricating manner, so that a single specimen may cover an area many yards in diameter. The stem and leaves are sometimes pubescent."

MAY 1ST, 1899.

Sir F. von Mueller, in his little volume on the "Vegetation of the Chatham Islds.," has the hardihood to refer this and twenty other well characterized New Zealand species of *Veronica* to *V. salicifolia*! Under the same inspiration, in the same work, he reduces thirty-five species of *Epilobium*, including *E. alpinum*, L., to *E. tetragonum*, L. It is unfortunate that Mueller never visited either New Zealand or the Chatham Islds., for a little knowledge of the species of both genera in their native countries might have modified his views.

The figure of *V. Dieffenbachii* was made from a specimen sent me by Robert Lindsay, Esq., of Kaimes Lodge, Murray-field, Midlothian, in August, 1898. The plant is cultivated at Kew, where it flowers freely in a sheltered border in October.

Descr.—A glabrous or puberulous shrub, with long, divaricating, terete, green, leafy branches. *Leaves* sessile, spreading, and recurved, three to four inches long, linear-oblong, acute, coriaceous, midrib stout otherwise, veinless, base broadly cordate, semi-amplexicaul, margins recurved, bright green above, pale beneath. *Flowers* very small, bright lilac, crowded in axillary, opposite, shortly pedunculed, sub-erect, cylindric dense racemes; peduncle and rhachis stout, terete; pedicels about one-tenth of an inch long, with a minute bract at the base. *Sepals* about as long as the pedicels, narrowly oblong, acute, ciliolate. *Corolla tube* longer than the sepals, funnel-shaped, limb a quarter of an inch broad, lateral and dorsal lobes subequal, orbicular, anterior lobe smaller. *Filaments* about as long as the corolla-lobes, anthers blue. *Capsule* very small, ovate, obtuse, or acute, dorsally compressed. *Seeds* minute, orbicular.—*J. D. H.*

Fig. 1, Two flowers, with pedicels and bracts; 2, two sepals, ovary, and base of style; 3, portion of raceme and capsule; 4, calyx and capsule; 5, seed; all but 3 (which is of *the natural size*) *enlarged*.

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CONTENTS OF No. 653, MAY, 1899.

Tab. 7652.—NICOTIANA SYLVESTRIS.
" 7653.—CYRTANTHUS PARVIFLORUS.
" 7654.—ALNUS NITIDA.
" 7655.—DAHLIA MANIMULIANA.
" 7656.—VERONICA HIEFFENBACHII.

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Tab. 7657.

BEGONIA venosa.

Native of Brasil.

Nat. Ord. Begoniaceæ.

Genus Begonia, *L.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 841.)

Begonia (Rachia) *venosa*; caule erecto elato valde robusto folioso sublanuginoso, foliis amplis subpeltatim petiolatis auriformibus obtusis basi late bilobis margine undulatis palmatinerviis crassiusculis supra lurido viridibus pilis flaccidis albis rufisque sublanatis, subtus densius lanatis nervis subsimplicibus validis, stipulis maximis (2-pollicaribus) internodio æquilongis erectis oblongis subacutis inflatis tenuiter rigide membranaceis pallide rufis parallelinerviis venulis transversis reticulatis, pedunculis valde elongatis erectis, cymis corymbiformibus mediocribus bisexualibus, bracteis parvis lineari-oblongis caducis, floribus breviuscule pedicellatis ad ¾ poll. latis albis, masc. sepalis 2 orbiculatis dorso tomentosis v. glabratis, petalis 2 minoribus et angustioribus, staminibus numerosis, filamentis brevissimis, antheris oblongis, connectivo producto crasso apice rotundato, fl. fem. sepalis 4 orbiculatis, petalo unico minore oblongo, ovario 3-loculari, placentis bipartitis segmentis undique ovuliferis, stylis brevibus hippocrepiformibus undique stigmatosis cornubus brevibus tortis.

B. venosa, *Skan in Kew Bulletin*, 1899, ined.

A magnificent and very distinct species, remarkable for the frosted, silvery appearance of the upper surface of the leaves, and the very large inflated stipules, which are of a membranous, transparent, but firm consistence, and are traversed by strong, straight, parallel veins, the interspaces being crossed by capillary reticulating venules. They contrast by their pale, reddish colour with the bright green of the stems which they embrace, all but concealing the internodes. The flowers are comparatively inconspicuous.

B. venosa falls into none of the sections of the genus as these are defined by Klotzsch and A. de Candolle, but its close affinity in habit, indumentum, foliage, stamens, styles and placentation with *B. incana*, Lindl., determines its place to be with that plant in sect. *Rachia*, A.DC., providing that the character hitherto given to *Rachia*, of sepals 3, petals 2, be altered to sepals 2-4, petals 1-2. *B. incana* is a native of hot, dry, sunny places in Mexico. The native country of *B. venosa* is not satisfactorily known. Mr. Thos. Christy, F.L.S., who sent to Kew Herbarium the specimen here figured, together

with a living plant for the Royal Gardens (which has already flowered), informs me that it was discovered by Professor Lofgren, head of the Botanical Dept. of the state of Sao Paolo, in an island off the coast of Brasil, but whether off Para, or off the mouth of the river Santos (Prov. Sao Paolo), Mr. Christy cannot inform me. That gentleman has observed that the female flowers are not fully developed until the males have fallen away.

Descr.—*Stem* tall, erect, very robust, upwards of half an inch in diameter, and as well as the leaves covered with a cottony white or reddish tomentum. *Leaves* long-petioled, thick in texture, ear-shaped, with a deeply 2-lobed base, six inches long, dull green, frosted above with sparse white tomentum, mixed with rufous hairs, *more* densely rufously tomentose beneath, margin undulate; nerves few, strong, radiating from the sub-peltately attached petiole, which is three to five inches long, stout, terete, and like the peduncle sparsely clothed with hairs; stipules two inches long, oblong, ventricose, sub-acute, almost concealing the internodes of the stem, of a very thin but rigidly membranous texture, pale rufous, with about eight parallel strong nerves, and very delicate anastomosing cross nervules. *Cymes* about four inches broad, on rather slender, erect, axillary, red peduncles, eight to ten inches long, bisexual; bracts small, linear-oblong, caducous. *Flowers* shortly pedicelled, about three-fourths of an inch broad, pure white; males with two orbicular sepals, and two much smaller, narrowly oblong petals; female of four orbicular sepals and one oblong petal. *Stamens* many, crowded on a small receptacle; anthers oblong, much longer than the filaments, connective thickened upwards, with a produced rounded top, cells narrow, diverging upward. *Styles* very short, horse-shoe shaped, with short, erect arms, terminating in twisted tips, all clothed with papillose hairs. *Ovary* trigonous, narrowly three-winged; placentas bipartite, segments covered with ovules on both faces.—*J. D. H.*

Fig. 1, Stamen; 2, fem. flowers; 3, ovary and styles; 4, transverse section of ovary:—*All enlarged.*

M.S del.J.N.Fitch lith.

Brooks, Day & Son Lith.

Tab. 7658.

MORÆA SULPHUREA.

Native of Cape Colony.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Moræa, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 688.)

Moræa *sulphurea*; cormo globoso parvo, foliis productis linearibus firmis glabris caulis basin vaginantibus, caule gracili monocephalo, spathæ cylindricæ valvis linearibus viridibus inæqualibus, exteriore minore, perianthio sulphureo segmentis omnibus e medio reflexis ad basin limbi aurantiaco maculato punctis et lineis brunneis decoratis, exterioribus obovato-cuneatis, interioribus paulo angustioribus, styli ramis brevibus sulphureis appendicibus lanceolatis.

This new, slender little *Moræa* belongs to a group distinguished by the stems bearing only a single terminal cluster of flowers, and resembles in habit *M. Baurii*, Baker, and *M. lurida*, Ker. Corms were received from Mr. J. Matthews, of Capetown, in 1896, and which flowered for the first time in a cool stove at the Royal Gardens, Kew, in April, 1898. Very few of the Moræas are now in cultivation, but the number of species known has gone on, of late years, steadily increasing, till it has reached forty-seven species at the Cape, and eighteen in tropical Africa, in addition to the gigantic *M. Robinsoniana* of Lord Howe's island. Many of them are very fine plants, with leaves as broad, and flowers as large as in the European Irises, whilst in others the flowers are small and fugitive.

Descr.—*Corm* small, globose. *Produced leaves* two, sheathing the base of the stem for some distance, linear, firm, dark green, glabrous, three or four inches long. *Stem* slender, terete, under a foot long, bearing a single terminal cluster of flowers, and two small sheathing leaves. *Spathe* cylindrical, under an inch long; outer valves firm, linear, green, the exterior one small. *Perianth* sulphur-yellow, an inch long, segments all reflexing from the middle, and marked at the throat with a spot of darker yellow, with radiating brown lines and spots; outer segments obovate-cuneate, a third of an inch broad; inner

rather narrow. *Ovary* clavate, small; style-branches pale yellow; appendages large, lanceolate, erect.—*J. G. Baker*.

Fig. 1, Stamen, front view; 2, stamen, back view; 3, style-branch, with appendages:—*All enlarged.*

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M.S del. J.N.Fuchs lith.

Tab. 7659.

KLEINIA pendula.

Native of Somaliland and Arabia.

Nat. Ord. Compositæ.—Tribe Senecionideæ.

Genus Kleinia, *Linn.*; Senecio (Kleinia) (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 449.)

Kleinia *pendula*; glaberrima, fere aphylla, caule decumbente carnoso miro modo tortuoso e articulis paucis crasse carnosis divaricatis constante, articulis cylindricis 4–15 poll. longis ½–¾ poll. diam. incurvis v. inflexis sparse spinulosis luride viridibus striatis basi rotundatis apice attenuatis superiore areola parva inferiori infra apicem adnata, foliis apicibus nascentibus articulorum fasciculatis ½ poll. longis teretibus carnosis demum in spinulas rigidas decurvas basi tumidas mutatis, pedunculis 1–2 terminalibus, unifloris bracteis paucis linearibus sparsis, capitulo multifloro, involucri pollicaris cylindrici basi nudi bracteis anguste linearibus acutis striatis tubis florum brevioribus, floribus miniato-aurantiacis, styli ramis fl. radii lineari-elongatis obtusis, fl .disci brevioribus cono parvo terminatis, achæniis hirtulis, pappi setis tenuissimis subscaberulis albis.

K. ? pendula, *DC. Prodr.* vol. vi. p. 339.

Cacalia pendula, *Forsk. Fl. Ægypt. Arab.* p. 145. *Vahl, Symb.* vol. iii. p. 90.

Senecio pendulus, *Sch. Bip. in Flora*, vol. xxviii. (1845) p. 500.

S. Gunnisii, *Baker in Kew Bullet.* 1895, p. 217.

Notonia trachycarpa, *Klotz.* (*Pl. Bind.*) *in Sitzb. Acad. Wien. Math.-Nat.* li. *Abth.* ii. (1865) 370, t. 8. *Oliv. Fl. Trop. Afric.* vol. iii. p. 408, excl. syn. omn.

Kaad, *Arab.*

A very singular plant, the distorted form of which, as shown in the reduced figure given in the accompanying plate, suggests the idea of its not being merely tortuous, but distorted. The serpentine branches of the stem are divaricate at all manner of angles, are curved or twisted in various ways, and are superposed on one another, with the upper never terminating the lower, but attached at its side below the apex by a very narrow point of junction.

K. pendula is a native of dry, rocky mountains in Arabia, Abyssinia, and Somaliland. It was discovered in Yemen by the Swedish naturalist Forskoel, in 1762, and has been collected in Hadramaut by Bent, in Abyssinia by Schimper, and in Somaliland by Hildebrandt, and by Mrs. Lort Phillips and Miss Edith Cole.

A specimen was brought by these ladies to the Cambridge Botanical Gardens, where it flowered in October, 1898, and was kindly sent to Kew for figuring in this

work by Mr. Lynch. Specimens from both Mr. Bent and Mrs. Lort Phillips are growing most luxuriantly at Kew, and have attained much longer stems than the native ones, or than that figured in the plate. The joints root freely at the articulations, and often at the tips also. As to the genus of this plant, that depends on the value attached to *Kleinia*, Linn., as distinct from *Senecio*. Of absolute distinction between these there is none, but *Kleinia* forms a fairly circumscribed group, distinguished by a succulent habit, cylindric, ecalyculate involucre, long, narrow, uniseriate bracts, and homogamous discoid flowers, the outer of which have small conical appendices to the style-arms. For horticultural usage the name is very convenient. *Notonia*, DC., is absolutely identical with *Kleinia*.

Descr.—A decumbent, almost leafless, fleshy perennial. *Stem* consisting of a few superposed curved or crooked, fleshy, cylindric joints, the upper of which is laterally articulate with that below it by a very narrow area below the point; joints four to fifteen inches long, by one half to three-quarters of an inch in diameter, sparsely spinulose, incurved or inflexed, dull green, striated, base rounded, tip narrowed, obtuse. *Leaves* produced only at the growing tips of the young joints, about a quarter of an inch long, filiform, terete, fleshy, transformed into shining recurved spinules, with a swollen base as the joint develops. *Peduncles* one or two, terminal, erect, deflexed, or horizontal, three or more inches long, furnished with a few small, narrow bracts. *Involucre* about an inch long, by half an inch in diameter, cylindric, naked at the base; bracts narrowly linear, acute, shorter than the flowers, striate. *Flowers* forming a depressed head, much broader than the involucre, about an inch and a half in diameter, of a bright vermilion colour mixed with orange-yellow.—*J. D. H.*

Fig. 1, Ray-flower; 2, disk-flower; 3, hair of pappus; 4, stamen; 5, style-arms of ray-flower:—*All enlarged*:—6, reduced view of the Cambridge Garden specimen.

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M S. del J.N. Fitch lith.

Vincent Brooks Day & Son Lith Imp

Tab. 7660.

CHRYSANTHEMUM NIPPONICUM.

Native of Japan.

Nat. Ord. Compositæ.—Tribe Anthemideæ.

Genus Chrysanthemum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 424.)

Chrysanthemum *nipponicum*; fruticulus 1–2-pedalis, erectus, caule simplici robusto paucifloro, foliis confertis 3–4-pollicaribus, sessilibus oblongo-obovatis oblanceolatisve obtusis basi angustatis integerrimis sursum crenato-serratis coriaceis supra læte viridibus subtus pallidis, pedunculis monocephalis robustis foliis paucis abbreviatis instructis, capitulis 2–3½ poll. diam., involucri hemispherici bracteis late ovatis obtusis herbaceis fusco marginatis, fl. radii ligulis linearibus albis apice 5-dentatis, fl. disci tubulosis pallide flavido-virescentibus, tubo tereti, dentibus brevibus erectis, antheris breviter appendiculatis, styli fl. fem. ramis brevibus apicibus truncatis stigmatosis, achæniis teretibus glabris, pappo squamuloso.

C. nipponicum, *Wien. Ill. Gartenzeit.* 1895, p. 12. W. Watson *in Gard. Chron.* 1897, vol. i. p. 46; 1898, vol. ii. p. 348, fig. 104.

Leucanthemum nipponicum, *Franch. ex Maxim. in Bull. Acad. Pétersb.* vol. xvii. (1872) p. 420; *Mél. Biol.* vol. viii. p. 512.

Somoko Zusetsu, vol. xvii. t. 15 (13 litt. Jap.)

Hama-giku, *Jap.*

A very distinct species, cultivated in the gardens of Japan, where, according to a note by Maximowicz attached to specimens collected by him at Jedo on his second journey (1862), it is considered to be a plant introduced into Japan, but from what country is not known. There are specimens in the Kew Herbarium from Father Faurie, ticketed "Yokohama," probably procured from a nursery. The species was introduced into Europe by Messrs. Damman & Co. of Naples, from whom the plant grown at Kew, from which the accompanying figure is taken, was purchased.

But for its sensitiveness to frosts, *C. nipponicum* would be a very valuable open border plant. The specimen figured flowered in the Temperate House of the Royal Gardens in October, 1898. This year, owing to the absence of frosts, it has flowered freely in the open air in the same month; but it has in former years been so often cut down by early frosts that it cannot be regarded as hardy.

June 1st, 1899.

Descr.—A stout, glabrous undershrub, one to two feet high, with a simple leafy stem, woody at the base, and few-fld., corymbose inflorescence. *Leaves* crowded, three to four inches long, oblanceolate, or obovate-oblong, obtuse, narrowed into an entire sessile base, crenate-serrate above it, rather thickly coriaceous, dark green above, pale beneath. *Head* variable in size, up to three and a half inches in diameter, on long, stout one-flowered peduncles, that bear a few very short leaves. *Involucre* hemispheric; bracts short, broadly ovate, obtuse, herbaceous, green, with broad, red-brown, scarious margins. *Ray-flowers* very many, ligules linear, tips minutely five-toothed. *Disk-flowers* greenish-yellow, tube terete, lobes minute, erect. *Anther* with short tips. *Style-arms* of disk-flowers with truncate, papillose tips. *Achenes* (immature) terete, crowned with a minute paleaceous pappus.—*J. D. H.*

Fig. 1, Ray-flower; 2, disk-flower; 3, stamens; 4, style-arms of disk-flower: *All enlarged*; 5, *reduced* view of whole plant.

M. S. del. J N Fitch lith

Vincent Brooks, Day & Son Lt^d Imp

Tab. 7661.

IRIS Delavayi.

Native of Yunnan.

Nat. Ord. Irideæ,—Tribe Moræeæ.

Genus Iris, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 686)

Iris (Apogon) *Delavayi*; rhizomate repente elongato, foliis 2–2½ ped. longis ½–⅔ poll. latis strictis erectis linearibus acuminatis costatis glauco-viridibus, pedunculo 3–4 pedale valido erecto fistuloso foliis 1–2 minoribus angustioribus instructo superne furcato paucifloro, spathis 2½–3 poll. longis, foliaceis lanceolatis acuminatis carinatis apicibus scariosis, pedicellis bracteis subæquilongis, perianthii 2–2½ poll. expans. tubo ad ½ poll. longo, segmentis exterioribus reflexis, limbo oblongo obtuso saturate violaceo basin versus albo striolato, ungue limbo æquilongo nudo viridi late alato alis violaceis albo-punctatis, interioribus erectis oblongo-lanceolatis subacutis, stigmatibus oblongis apice 2-lobis violaceis lobis orbicularibus crenulatis, antheris aureis, capsula 2½ poll. longa trigona.

I. Delavayi, *Micheli in Rev. Hortic.* 1895, p. 349, fig. 128, 129; *Jard. du Crest*, p. 189.

As pointed out by its author, Mr. Micheli, *Iris Delavayi* is closely allied to *I. sibirica*, which has a very wide range, from Central and Southern Europe to Eastern Siberia and Japan. No further evidence of this is necessary than a reference to the figure of the latter plant at tab. 50 of this work. The differences indicated by Mr. Micheli are, that in *I. Delavayi* the peduncle is longer than the leaves, the spathes are foliaceous, not scarious, the flowers are longer pedicelled, the tube of the perianth is longer, and the capsule larger and triquetrous. Of which characters, however, that of the longer pedicels does not hold good. It is also very near the Japanese *I. laevigata*, Fisch & Mey. (*I. Kæmpferi*, Sieb.), to which *I. sibirica*, var. *sanguinea*, Ker (*I. sibirica*, var. *orientalis*, Baker in Journ. Linn. Soc. Bot. vol. xvi. (1878) p. 139), tab. 1004 of this work is referable, in which the spathes are herbaceous, and perianth tube long.

I. Delavayi is a native of marshes in the Yunnan province of China. It was introduced into the Jardin des Plantes in 1889 by seeds sent by the Abbé Delavay. The specimens figured here are of plants raised from

seed presented by Mr. Micheli to the Royal Gardens, which flowered in the open air in October, 1898; they are considerably taller and stronger than those described in the Rev. Horticole, and differ from the description there given in the crests of the stigmas being orbicular (not deltoid).

Descr.—*Rootstock* stout, creeping. *Leaves* two to two and a half feet long, by one half to two-thirds of an inch broad, strict, erect, narrowly linear, acuminate, strongly ribbed. *Peduncle* longer than the leaves, erect, flexuous, with two or three very narrow leaves, forked at the top. *Spathes* two to two and a half inches long, lanceolate, herbaceous, green, with scarious tips. *Pedicels* about as long as the spathes. *Perianth* two to two and a half inches across the segments, tube half an inch long; outer segments recurved, limb oblong, obtuse, deep violet-blue, with tortuous white streaks in the lower half; claw as long as the limb, green, with violet white-spotted wings; inner segments erect, oblong-lanceolate, sub-acute, paler violet. *Anthers* linear, yellow; stigmas oblong, pale, violet, crests orbicular, crenulate. *Capsule* two and a half inches long, triquetrous—*J. D. H.*

Fig. 1 and 2, Stamens; 3, upper half of stigma:—*enlarged*; 4, *reduced* figure of plant.

Prospectus.

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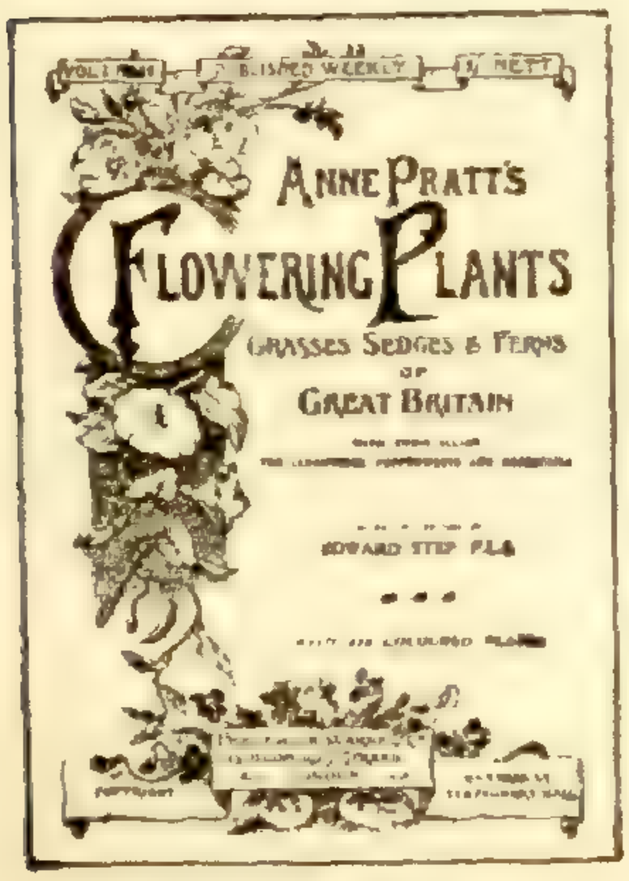

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clumps on the garden beds. On the rocks of Greece, as well as those of Palestine, the Cistus shrubs are very abundant, and all the genera abound most on dry and elevated spots, some of them being natives of almost all the countries of the world. The balsam called Ladanum, which is so much used as a perfume in Greece and in Oriental countries, and which is prized for its tonic and stomachic properties, is produced by the *Cistus creticus*. Southey has described the fragrance of the Cistus plants:

> "The forest or the lonely heath wide spread,
> Where Cistus shrubs sole seen, exhaled at noon
> Their fine balsamic odour all around,
> Strew'd with their blossoms, frail as beautiful,
> The thirsty soil at eve; and when the sun
> Relumed the gladden'd earth, opening anew
> Their stores exuberant, prodigal as frail,
> Whiten'd again the wilderness."

1. ROCK-ROSE (*Heliánthemum*).—Sepals 5, the two outer either smaller or wanting; petals 5; stamens numerous; capsule 3-valved. Named from the Greek *helios*, the sun, and *anthos*, a flower, because the flowers expand in the sunshine.

1. ROCK-ROSE (*Heliánthemum*).

1. **Common Rock-rose** (*H. vulgáre*).—Stem shrubby, prostrate; leaves with fringed stipules, opposite, oblong, green above, hoary beneath; calyx of five leaves, the two outer very small and fringed; seeds black. Plant perennial. Anyone used to roam over the chalky or gravelly soils of this country must have often seen, early in spring and late in autumn, the prostrate branches of this Rock-rose, covered with their leaves. In spring these are of a tender verdant tint; but late in the year they are rigid, of a dark myrtle-colour, and shine with the deepest green hue on the reddened leaf-stems. When the sunshine of July pours down on the grassy slopes, and tinges their sides with its gleams, the clumps of brilliant yellow flowers are bright, as if the sun had turned them into gold. They are truly, as the ancients called them, Beauties of the Sun, or, as some country people term them, Sun-Roses; never opening save when skies are bright, and never lingering on till the late autumnal season. Their petals are crumpled and fragile, and the little unblown buds are very pretty, standing by thousands as they do among the grass on a cloudy day, waiting for the morrow's sun. The stamens are very sensitive, and if only touched by the wing of an insect or the point of a needle, they all lie down on the petals. It is long before they resume their erect position, and in some cases they appear not to do so at all. The bees seem very fond of these flowers, flying from one clump to another, with their deep joyous humming, passing by their favourite wild thyme, to rob the Cistus flower, which first invited them; for these sagacious insects keep throughout the morning to the same kind of blossom as that from which they first gathered the honey, and never mingle the sweets of the thyme and the Cistus.

Many writers on the flowers of Scripture consider that a variety of this Rock-rose is the plant alluded to in the Canticles, as the Rose of Sharon. It does not appear that the Hebrew word, *Chabazzeleth*, which our translators have rendered by "rose," is ever applied to that flower; and as the plains of

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CONTENTS OF No. 654, JUNE, 1899.

Tab. 7657.—BEGONIA VENOSA.
" 7658.—MORÆA SULPHUREA.
" 7659.—KLEINIA PENDULA.
" 7660.—CHRYSANTHEMUM NIPPONICUM.
" 7661.—IRIS DELAVAYI.

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Tab. 7662.

YUCCA Whipplei.

Native of California.

Nat. Ord. Liliaceæ.—Tribe Dracæneæ.

Genus Yucca, *Dill.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 778.)

Yucca (Hesperoyucca) *Whipplei*; caule brevissimo prostrato stolonifero, foliis numerosissimis densissime confertis patentibus lineari-subulatis falcatis v. strictis rigidis 10–20 poll. longis a basi ½ poll. lata sensim angustatis glaucis striatis dorso carinatis, apicem trigonum pungentem versus concavis, marginibus serrulato-asperis, scapo 4–12-pedali robusto stricto, bracteis 6–9 poll. longis e basi lata foliaceis recurvis inferioribus confertis foliiformibus, supremis ad basin paniculæ latioribus, panicula cylindracea densiflora, perianthii 2–4 poll. diam. subglobosi segmentis incurvis albo-virescentibus apices versus rubro-purpureo marginatis exterioribus oblongo-lanceolatis acuminatis interioribus multo latioribus, filamentis erectis sursum incrassatis lævibus, antheris didymis, ovario oblongo, stylo brevi, stigmate crasso trilobo, capsula globoso-ovoidea 1–2 poll. longa, erecta, obtusa, loculicide 3-valvi, valvis integris, seminibus parvis valde compressis lævibus anguste marginatis.

Y. Whipplei, *Torr. in Bot. Mex. Bound.* p. 222 (*textu*). *Bot. Exped. Ives*, p 29. *Bot. Works Engelmann*, pp. 277, 296, 297, 298, 307. *Gard. Chron.* 1876, vol. ii. p. 197, fig. 42. *S. Wats. in. Bot. Calif.* vol. ii p. 164, *et in Proc. Amer. Acad.* vol. xiv. p. 254. Baker, *Rivist. Yucchi, Beaucarn. e Dasylir. in Bull. R. Soc. Tosc. di Ortic.* 1881-2, p. 23. *The Cactus Journal, June*, 1899, p. 73 *cum ic.*

Y. graminifolia, *Wood in Proc. Acad. Sc. Philadelph.* 1868, p. 167.

Y. aloifolia, *Torr. Pacific R. Rep.* vol. iv. p. 147.

?Agave californica, *Hort. Kew. ex Jacobi, Agave, App.* p. 117. *Lemaire, Ill. Hortic.* 1863, *sub* tab. 372.

Yucca Whipplei is a native of rocky mountains in California, from San Bernardino to Monterey, extending thence eastwards to N.W. Arizona. It is a very stately species, attaining twice the height of an ordinary man, with copious bright green foliage, a stout, bracteate scape, and a noble panicle of large, sub-globose flowers. The figure here given was drawn by Lady Thiselton-Dyer, during a visit to the Commendatore Hanbury, Palazzo Orengo, Ventimiglia, in April, 1891, when the plant was flowering for the first time in that gentleman's magnificent garden. From a record, preserved at the Palazzo, and communicated to me by Commendatore Hanbury, it appears

that ripe seeds of this *Yucca* were received in January, 1882, from Ludwig Winter, of Bordighera. These would give the age of the specimen at first flowering as nine years. It flowered a second time in the autumn or winter of 1896, but not since, though it is alive and well.

Descr.—Stoloniferous. *Stem* very short and prostrate, or none. *Leaves* most densely crowded, in an almost globose mass, two to three feet in diameter, spreading on all sides, linear-subulate, ten to twenty inches long, suddenly tapering from a base about half an inch broad to a trigonous pungent tip, rigid, straight, or curved, glaucous-green, striate, dorsally keeled, margins minutely serrulate. *Scape* four to twelve feet high, very stout, erect, loosely covered above, densely below, with erect or recurved foliaceous bracts, six to nine inches long. *Panicle* erect, cylindric, dense-flowered, two to four inches in diameter, quite glabrous; branches many-flowered; floral bracts small. *Flowers* globose, two to two and a half inches in diameter, pendulous from stout, decurved pedicels, an inch and a half long; perianth-segments incurved, concave, acute, greenish-white, margined with dull purple, outer broadly oblong-lanceolate, inner narrower. *Stamens* about half as long as the perianth-segments; filaments stout, thickened in the middle, quite smooth; anthers didymous. *Ovary* oblong, laterally six-lobed; style very short, stigma three-lobed. *Capsule* two and a half inches long, broadly oblong, trigonous —*J. D. H.*

Fig. 1, Stamen; 2, ovary; 3, capsule:—*All enlarged*; 4, *reduced* view of plant.

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H.T.D. del, J.N.Fitch lith

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Tab. 7663.

ACACIA sphærocephala.

Native of Mexico.

Nat. Ord. Leguminosæ.—Tribe Acacieæ.

Genus Acacia, *Willd.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 594.)

Acacia (Gummiferæ) *sphærocephala*; frutex rigidus, ramosus, stipulis spinescentibus demum maximis 1½-pollicaribus corniformibus rectis curvisve ima basi connatis, foliis bi-pinnatis, pinnis 2–3-jugis, foliolis 20–30-jugis oblongis subacutis ½–¾ poll. longis glaberrimis saturate viridibus apicibus nudis v. appendicula fusiformi carnosula caduca flavida instructis, spicis globosis ochroleucis in paniculas ramosas ramis ramulisque robustis glaberrimis dispositis breviter pedicellatis, floribus densissime congestis, squamulis peltatis gracillime stipitatis immixtis, calycis urceolati puberuli lobis brevibus rotundatis, corolla calyce paullo longiore ore vix lobato, staminibus breviter exsertis.

A. sphærocephala, *Cham. & Schlecht. in Linnæa*, vol. v. (1830), p. 594. *Benth. in Trans. Linn. Soc.* vol. xxx. p. 514. *Hemsl. Biol. Centr. Am. Bot.* vol. i. p. 355.

Acacia No. 12, *Mill. Gard. Dict.* Ed. III. (1737).

Acacia spinosa, &c., *Mill. Fig. Plant.* vol. i. p. 4, t. 6 (1755).

?Mimosa campeachyana, *Mill. Gard. Dict.* Ed. viii. (1768) No. 20; ed. *Martyn*, No. 75 (1807).

M. cornigera, *Linn. Sp. Pl.* p. 520, *pro parte.*

Arbor cornigera, *Commel. Hort. Med. Amstelod.* vol. i. p. 209, t. 207.

This is one of the two plants long known in cultivation under the name of *Mimosa cornigera*, the intricate synonymy of which I have discussed under *Acacia spadicigera*, tab. 7395. Though very different in inflorescence, these two species come from the same country, closely resemble one another in habit of growth, foliage, the stipules, and in the more remarkable character of bearing on the tips of some of their leaflets, fleshy, oblong appendages, that supply food to stinging ants which nest in the accrescent hollow stipules. Under the same tab. I have extracted from the late Mr. Belt's "Naturalist in Nicaragua," that gentleman's fascinating description of the habits of these ants, of which there are at least two species belonging to different genera. To that full description I must refer for the functions of the organs of *A. sphærocephala*.

July 1st, 1899.

Whether *A. sphærocephala* or *A. spadicigera* was the species cultivated as the Cuckold tree so long ago as 1692, in the Royal Gardens of Hampton Court, remains doubtful; as also whether or no it is the "Arbor cornigera" of Hernandez, "Rerum Med. Nov. Hisp. Thes.," p. 86, published in 1651. The former species was certainly known to Breyn in 1680, and it may be reasonably surmised that the Hampton Court plant was procured from Amsterdam. It has long been known in European gardens, and there are specimens in the Kew Herbarium from the Montpellier and Liverpool Botanical Gardens, collected early in the century; how long it has been at Kew is not known. The *A. cornigera* of Aiton's "Hortus Kewensis" is certainly *A. spadicigera*, for the spadix-like inflorescence is described in that work.

A. sphærocephala is a native of Mexico and Central America, and there are specimens in the Kew Herbarium collected in Texas.

Descr.—A shrub with the habit and characters of *A. spadicigera*, Cham. & Schlecht. tab. 7395, but with fewer leaflets, and with panicled, globose heads of flowers; the fruit is unknown.—*J. D. H.*

Fig. 1, Spinous stipules, of the *nat. size*; 2, flower; 3, stamens; 4, pistil:—*All enlarged.*

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Tab. 7664.

MASDEVALLIA muscosa.

Native of Colombia and Ecuador.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Masdevallia, *Ruiz & Pav.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 492.)

Masdevallia *muscosa*; caespitosa, folio 1½–2 pollicari ovato-oblongo v. oblanceolato in petiolum ½–1 poll. longum sulcatum angustato coriaceo glaberrimo supra papilloso saturate viridi subtus pallidiore purpureo suffuso petiolo ima basi vaginato, scapo unifloro 5–6-pollicari gracillimo pilis glanduligeris laxis patentibus obsito, medium versus vagina parva cylindracea obtusa glaberrima instructo, bractea vagina simili ⅕ poll. longa membranacea brunnea, pedicello brevi decurvo glaberrimo, ovario hispido, sepalis basi pallide flavis purpureo striatis in tubum campanulatum gibbum connatis sursum in caudas pollicares apicibus clavellatis productis, petalis ¼ poll. longis linearibus apicibus rotundatis margine superiore supra medium unidentatis, labelli ¼ poll. longi ungue limbo æquilongo tomentoso aureo rubro punctulato, limbo triangulari-obovato velutino lateribus rotundatis purpureo basi aureo marginibus incurvis setulosis, columna anguste alata, anthera dorsali.

M. muscosa, *Reichb. f. in Gard. Chron.* 1875, vol. i. p. 460; 1881, vol. ii p. 336. *Bean in Gard. Chron.* 1887, vol. i. p. 836. *Veitch Man. Orchid.* part v. p. 54. *Woodward, Masdevall.* t. 39. *F. Oliver in Ann. Bot.* vol. i. (1887-8), p. 237, tab. xii.

M. muscosa is a very interesting plant, being the only one of the seventy or eighty species of *Masdevallia* that have been described or enumerated, in which the lip has been shown to be sensitive, and to entrap insects in the flower. This discovery was made by Mr. Bean, when foreman of the Orchid Collection of the Royal Gardens in 1887, and is described by him in the *Gardeners Chronicle* for that year (vol. i. p. 836); and later by Prof. F. Oliver, in an elaborate paper, illustrated with anatomical details, which appeared in the "Annals of Botany" of the same year. It may briefly be described as follows. The claw of the lip is sensitive, and on being touched, however lightly, by an insect alighting on the blade, the latter springs up, imprisoning the insect between it and the column. The insect is then in a position to detach the pollen, which on its release by the blade falling back, is carried off. On visiting the lip of another flower the insect

is in a position to place the pollen on its stigmatic surface, and thus effect cross-fertilization.

In the Australian genus *Pterostylis* (see tab. 6351) the lip plays the same part as in this *Masdevallia*. The filament of the stamen in *Stylidium* is similarly irritable.

M. muscosa is a native of the Andes of Colombia and Ecuador, at elevations of 5850 to 7475 ft., where the mean temperature ranges from 59° to 62° Fahr., flowering in September and October. The specimen here figured flowered in the Royal Gardens, Kew, in May, 1887.

Descr.—*Leaves* one and a half to two inches long, oval- or -oblanceolate-oblong, coriaceous, deep green and papillose on the surface, clouded with purple beneath, tip minutely three-toothed, base narrowed into a channelled petiole shorter than the blade. *Scape* five to six inches high, one-flowered, very slender, covered with flexuous, glandular hairs, girt at about the middle by a small, tubular, obtuse, brown, membranous sheath. *Bract* a quarter of an inch long, like the sheath on the scape; pedicel rather longer than the bract, glabrous. *Ovary* decurved, hispid. *Sepals* yellow, streaked with purple, united into a campanulate tube gibbous at the base, then suddenly narrowed from a triangular base into slender, erect, or recurved tails one inch long, with clavellate tips. *Petals* small, linear, yellow, with a red midline, tip rounded, outer margin toothed above the base. *Lip* small, claw as long as the blade, tomentose with yellow hairs; blade triangular, golden-yellow towards the base, purple beyond it. *Anther* dorsal on the top of the column.—*J. D. H.*

Fig. 1, Lip; 2, transverse section of flower, showing the dorsal position of the anther:—*Both enlarged.*

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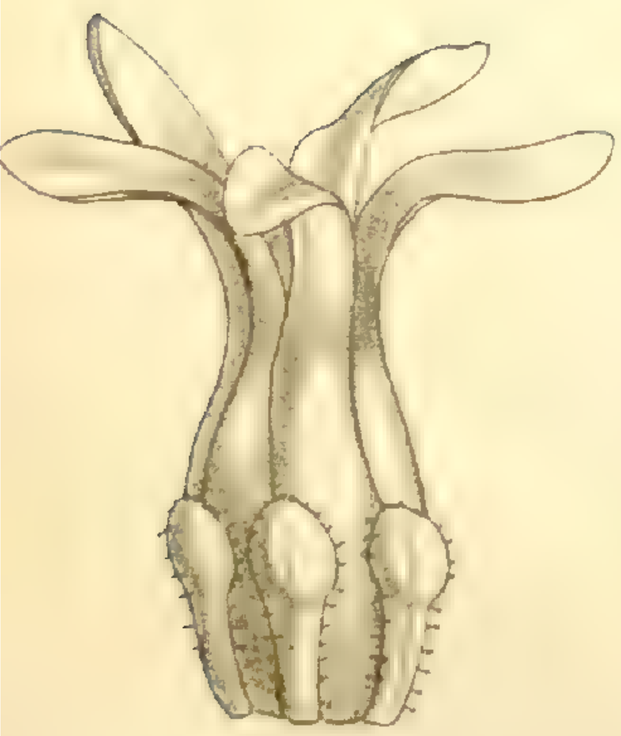

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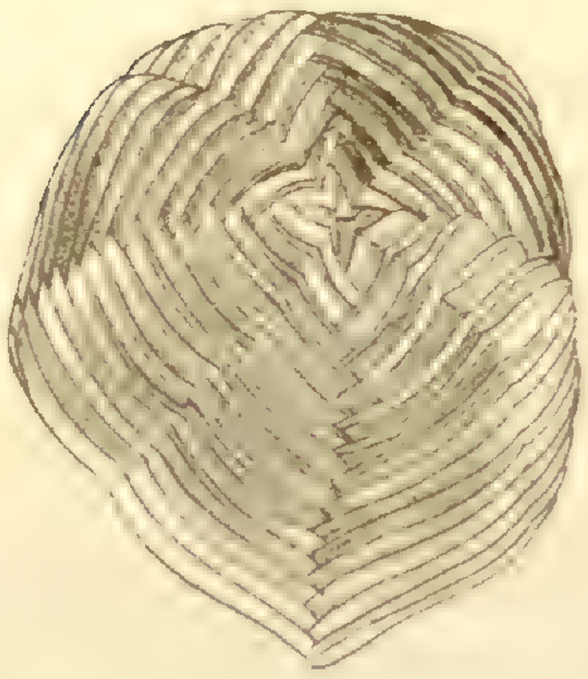

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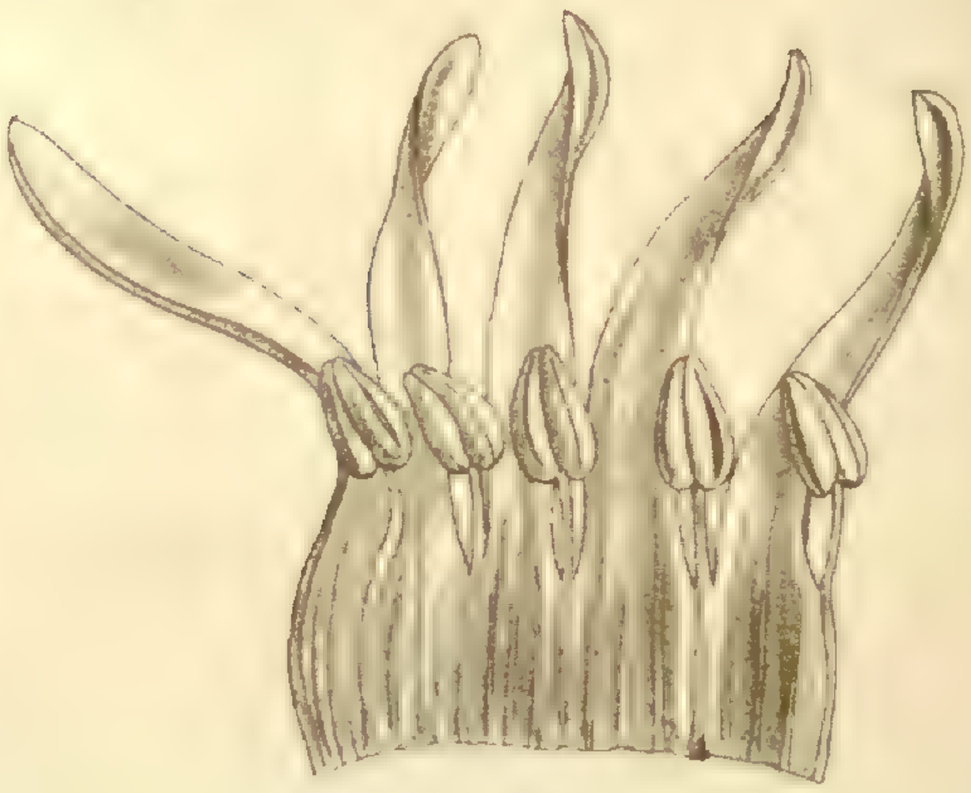

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D del. J N Fitch lith

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Tab. 7665.

CRASSULA PYRAMIDALIS.

Native of the Cape of Good Hope.

Nat. Ord. Crassulaceæ.

Genus Crassula, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 657.)

Crassula (Pyramidella) *pyramidalis*; nana, caulibus 2–8 pollicaribus foliis omnino velatis cum foliis tetragonis simplicibus vel ramulis brevissimis instructis, foliis quadrifariam imbricatis horizontalibus arctissime imbricatis carnosulis triangulari-ovatis basi subcordatis liberis semiamplexicaulibus marginibus puberulis, floribus pentameris, in capitula globosa terminalia ½–1 poll. diam. confertis albis pentameris, sepalis parvis anguste spathulatis marginibus ciliatis, corollæ glaberrimæ tubo ovoideo sepalis duplo longiore, lobis tubo longioribus linearibus obtusis recurvis, filamentis brevibus, antheris longiusculis ovato-oblongis, squamulis e stipite gracili sursum dilatatis truncatis rubro-aurantiacis, carpellis ovoideis, stylis brevibus.

C. pyramidalis, *Linn. f. Suppl.* p. 189. *Thunb. Fl. Cap.* p. 287, *et in Nov. Act. Nat. Cur.* vol. vi. p. 336, t. 5 b. *DC. Prodr.* vol. iii. p. 388. *Harv. et Sond. Fl. Cap.* vol. iii. p. 338. *Burbidge in Gard. Chron.* 1872, p. 289, fig. 108, et 1885, vol. i. p. 545, fig. 101 (*icon. iterat.*).

C. quadrangula, *Endl. ex Walp. Rep.* vol. ii. p. 253.

Tetraphyle pyramidalis & quadrangula, *Eckl. & Zeyh. Enum.* p. 292, 293.

The plant here figured is that known in gardens as *Crassula pyramidalis*, Linn. f. and of Thunberg's "Flora Capensis," but it differs from the description of these authors in the leaves being much larger than one line long, and not being connate, as also in the heads of flowers being sometimes upwards of an inch across, and not merely "larger than a pea." It is possible that in its native state the plant never assumes the size which it does under cultivation, but this small size would not account for the leaves being connate. It must be left to Cape botanists to settle the question by a visit to the spot where Thunberg discovered *C. pyramidalis*, namely, near Olifant's River, by the thermal springs, "(Juxta flum. Olyfant's orientalem, prope thermas," fl. Octob.). Other habitats given by Harvey in the "Flora Capensis" are Karroo, between Uitenhage and Graaf Reynet; Kleplaat river;

Driekoppen, Zwaanepoetsport berge, and Gamka river, all in the South-western region of the Cape Colony.

C. pyramidalis has been long in cultivation at Kew, where it flowers in the Succulent House in May and June.

Descr.—*Stems* two to three inches high, entirely hidden from base to tip by the leaves, which are most densely quadrifariously imbricate, together forming a rather acutely four-angled, green column. *Leaves* spreading almost horizontally, nearly half an inch broad, those of each series being closely appressed to one another, broadly triangular, with rounded sides, thinly fleshy, green, margins puberulous in a young state, base contracted and semi-amplexicaul, with a semi-lunar insertion. *Flowers* capitately corymbose, forming a sessile head an inch in diameter or less, pentamerous, very shortly pedicelled, white. *Sepals* very small, narrowly spathulate, with ciliate margins. *Petals* united below into a tube twice as long as the sepals; free portions as long as the tube, linear, obtuse, sub-flexuously spreading. *Stamens* inserted in the corolla-tube, filaments very short, anthers large, ovate-oblong. *Hypogynous scales* dilated upwards from a very narrow base, truncate. *Carpels* narrowed into short styles.—*J. D. H.*

Fig. 1, Top of stem and leaves; 2, flower; 3, sepal; 4, corolla laid open; 5, hypogynous glands and carpels:—*All enlarged.*

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H.T.D. del. J.N.Fitch lith.

Tab. 7666.

ROSA xanthina.

Native of Central Asia and Afghanistan.

Nat. Ord. Rosaceæ.—Tribe Roseæ.

Genus Rosa, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 625.)

Rosa (Pimpinellifoliæ) *xanthina*; frutex 3–4-pedalis, erectus, ramosissimus, spinosus, fere eglandulosus, ramulis rubris glabris, aculeis semipollicaribus homomorphis confertis rectis rigidis basi compressis et valde dilatatis, foliis ramulis floriferis confertis ½–1 poll. longis 6–9-foliolatis, foliolis ovato-oblongis oblongis v. orbicularibus ad ¼ poll. longis serrulato-dentatis subtus praecipue glandulosis, stipulis oblongis subacutis integerrimis, floribus in ramulos brevissimos terminales solitariis ad 1 poll. diam. aureis, pedunculis brevibus glaberrimis v. glanduloso-pilosis, sepalis lanceolatis integerrimis v. apices versus paucidentatis extus glandulosis intus tomentosis, petalis sepalis longioribus obovato-oblongis, stylis liberis lanuginosis apicibus glabris, fructibus globosis ad ¼ poll. diam. gracile pedunculatis glaberrimis nitidis sepalis reflexis coronatis, acheniis primum villosis demum glabris.

R. xanthina, *Lindl. Ros. Monog.* p. 132 (*nomen*). *Crépin in Comptes rendus Soc Bot. Belg.* vol. xxv. pars ii. p. 14. *Franch in Nouv. Arch. Mus. Par.* Ser. II. vol. v. (*Plant. David.*), p. 117, t. 15/2. *Forbes et Hemsl. in Journ. Linn. Soc. Bot.* vol. xxiii. p. 255. *Koehne, Deutsch. Dendrolog.* p. 300.

R. platyacantha, *Schrenk in Bull. Acad. Petersb.* vol. x. (1842), p. 254. *Ledeb. Fl. Ross.* vol. ii. p. 75.

R. pimpinellifolia, *var.* platyacantha, *Crép. Mater., fasc.* v. p. 319.

R. Ecae, *Aitchis. in Journ. Linn. Soc. Bot.* vol. xviii. (1880), p. 54, et xix. (1882), p. 162, t. viii. *Oliv. in Hook. Ic. Plant.* vol. xiv. p. 21, t. 1329. *Christ. in Boiss. Fl. Orient. Suppl.* p. 207.

The discovery of *Rosa xanthina*, a central Asiatic species, in a single valley of Afghanistan, is a noteworthy fact in geographical distribution, for no other collector in that country had met with it. In the Kuram Valley of Afghanistan it abounds, both wild, and cultivated (for hedges), forming with *Amygdalus eburnea* the greater part of the scrub in the stony ridges of the Harieb district, at an elevation of six thousand to seven thousand feet, where it was found by the late Dr. Aitchison, F.R.S., when accompanying General (now Lord) Roberts, on the survey of that valley. It is a plant of very wide distribution. Lat. 33° N. is its southern as well as its western limit,

so far as is known, but it reappears in Turkestan, and spreads into Soongaria, the Altai Mts., Mongolia, and N. China, its northern limit being probably about lat. 45° N. The specific name *Ecae* is derived from the initials of Mrs. Aitchison's name, given before the plant was identified with Lindley's *Rosa xanthina*. The specimen figured is from a plant raised at the Royal Gardens from seed sent by Dr. Aitchison in 1880. It flowers in June.

Descr.—A rigid, erect shrub, three to four feet high, stem and branches armed with crowded, straight prickles about half an inch long, with dilated, compressed bases, branches and branchlets leafy, glandular, red when young. *Leaves* small, hardly an inch long, crowded on the branchlets, rhachis eglandular, stipules oblong, entire, sub-acute; leaflets five to nine, about a quarter of an inch long, from oblong to orbicular, serrulate-toothed, glandular beneath. *Flowers* peduncled, solitary at the base of the branchlets, about an inch in diameter, golden-yellow; peduncles glabrous, or glandular-hairy. *Calyx tube* globose; sepals lanceolate, entire, or toothed towards the tips, glandular externally, tomentose within. *Petals* orbicular. *Styles* free, tomentose, tips glabrous. *Fruit* globose, about a quarter of an inch in diameter, glabrous, crowned with the reflexed sepals. *Achenes* at length glabrous.—*J. D. H.*

Fig. 1 and 2, Petals; 3, fruit, both of *nat. size*; 4, carpel, *enlarged*.

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CONTENTS OF No. 655, JULY, 1899.

Tab. 7662.—YUCCA WHIPPLEI.
„ 7663.—ACACIA SPHÆROCEPHALA.
„ 7664.—MASDEVALLIA MUSCOSA.
„ 7665.—CRASSULA PYRAMIDALIS.
„ 7666.—ROSA XANTHINA.

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Tab. 7667.

ALOE Schweinfurthii.

Native of tropical N.E. Africa.

Nat. Ord. Liliaceæ.—Tribe Aloineæ.

Genus Aloe, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 776.)

Aloe (Eualoe) *Schweinfurthii*; acaulis v. caulescens, foliis perplurimis confertis incurvo-erectis 2–2½-pedalibus a basi compressa biconvexa 7 poll. lata sensim in apicem angustatis medium versus 2 poll. latis plano-convexis pallide viridibus marginibus rubris et aculeis brevibus remotis deltoideis incurvis rubris armatis, scapis pedalibus, inflorescentiæ paniculatæ ramis ascendentibus simplicibus robustis fusco-rubris apicibus floriferis infimis 6-pollicaribus, omnibus bracteis parvis late ovatis acuminatis conspersis, florum racemulis 3–4-pollicaribus erectis densifloris, pedicellis gracilibus erectis apice decurvis, bracteis iis ramulorum consimilibus, floribus 1¼ poll. longis pendulis, perianthio cylindraceo recto v. lente curvo basi rotundato infra medium corallino dein aureo, lobis parvis ovatis recurvis, antheris exsertis flavidis, ovario oblongo, stylo recto deflexo, stigmate punctiforme, capsula parva late oblonga obtusa obtuse trigona, valvis coriaceis transverse reticulatis, seminibus parvis late alatis.

A. Schweinfurthii, *Baker in Journ. Linn. Soc.* vol. xviii. (1885) p. 175; in *Fl. Trop. Afr.* vol. vii. p. 467. *Gard. Chron.* 1898, vol. i. p. 197, fig. 76.

Aloe Schweinfurthii is certainly the handsomest of all the species hitherto figured in this work. Of these its nearest tropical African ally is *A. Kirkii*, Baker, tab. 7386, which differs conspicuously in the short pedicels of the flowers, and in the spines of the leaves. Amongst the South African species it comes nearest to *A. virens*, Haw. tab. 1355, a much smaller plant, with a simple raceme, leaves dorsally tubercled, and bright red flowers, with perianth-segments longer than the tube.

The discoverer of this stately plant is Dr. Schweinfurth, who found it in the granite hill of Makporvu, in the Nyam Nyam county of N.E. tropical Africa, lat. 4° 45′ N., long. 28° 30′ E.; that is on the confines of the Bahr el Ghazal.

It was described originally by Mr. Baker, from dried specimens (distributed by its discoverer, Ser. iii. n. 167 of his Herbarium) as being caulescent; with close set mar-

ginal teeth on the leaves, a compressed peduncle, and a short, campanulate perianth-tube.

For the specimen from which the accompanying figure was made, and for a sketch of the whole plant, I am indebted to Commendatore Hanbury, F.L.S., who flowered it in his renowned garden of Pal. Orengo, La Mortola, in February of this year. I have also received a photograph of the whole plant through the kindness of Miss Wilmott, of Gt. Warley, Essex, with which Mr. Hanbury's sketch given here, perfectly corresponds.

Descr.—*Stemless* (as grown at La Mortola). *Leaves* two to three feet long, very numerous, all radical, sub-erect and incurved, tapering from a compressed base seven inches broad to an acute tip, section above the base biconvex, about an inch thick, and across the middle plano-convex, pale green, margins red, armed with rather distant short deltoid incurved red spines about one-sixth of an inch long, and as broad. *Peduncle* about a foot high, terete, red-brown, naked, branching above into a panicle as long as the leaves ; branches of panicle rather distant, ascending, pale red-brown, lower a span long, girt at the very base by two short appressed bracts, an inner annular, and an outer broadly ovate acute, bearing above solitary acuminate bracts a quarter to a third of an inch long, of the colour of the branch. *Flowers* in short, oblong racemes, three to four inches long, terminating the branches, crowded, pendulous ; pedicels about as long as the flowers, very slender, erect with decurved tips; bracts like those on the branch, but narrower and paler. *Perianth* about an inch long, cylindric, straight or slightly curved, bright red in the lower half, golden-yellow in the upper ; lobes very short, obtuse, recurved. *Stamens* shortly exserted, anthers dull yellow. *Capsule* two-thirds of an inch long, broadly oblong, obtuse at both ends, valves very coriaceous, transversely wrinkled. *Seeds* many, one-fifth of an inch long, oblong, surrounded by a hyaline wing.—*J. D. H.*

Fig. 1, Transverse section of a leaf towards the base; 2, upper part of a leaf; 3, portion of a panicle :—all of the *nat. size*; 4, a flower; 5, pistil :—*Both enlarged.*

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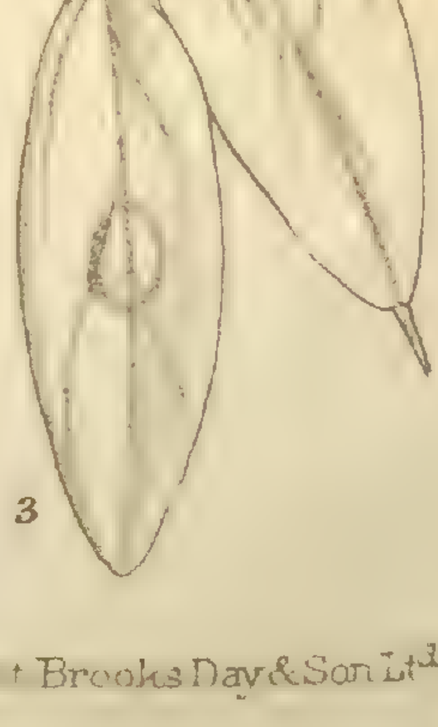

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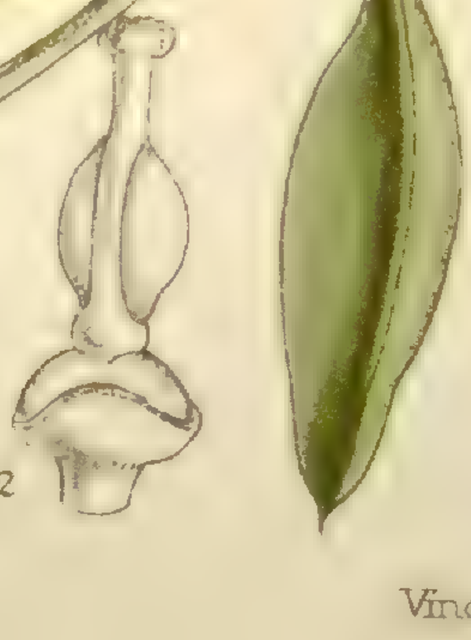

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M.S. del, J.N. Fitch lith.

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Tab. 7668.

HELIOPHILA scandens.

Native of Natal.

Nat. Ord. Cruciferæ.—Tribe Sisymbrieæ.

Genus Heliophila, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 81.)

Heliophila (Selenocarpæa) *scandens*; perennis, glaberrima, caule elongato gracili volubile ramoso folioso, foliis sparsis elliptico-oblongis v. lanceolatis acuminatis in petiolum angustatis, racemis subcorymbosis laxifloris, pedicellis gracilibus ebracteatis, floribus fere 1 poll. diam., sepalis subæquilongis oblongis obtusis 2 lateralibus multo latioribus dorso breviter crasse alatis, petalis spathulatis albis v. pallide roseis, filamentis nudis, antheris 4 majoribus recurvis, ovario subgloboso, stylo brevi, stigmate didymo, silicula $1\frac{1}{2}$-pollicari elliptico-oblonga utrinque acuta 1–3-sperma complanata, valvis membranaceis enerviis, seminibus orbicularibus valde compressis $\frac{1}{6}$ poll. latis.

H. scandens, *Harv. Thes. Capens.* vol. ii. p. 44, t. 166.

In the whole large natural Order of *Cruciferæ*, embracing about 180 genera, only two of these are recorded as bearing scandent species. They are the S. African genus *Heliophila*, and the Peruvian *Cremolobus*, DC., and in these the scandent habit is quite exceptional. *Heliophila* itself is rather an anomalous genus. It consists of nearly seventy species, confined to Africa South of the tropic, and as monographed in the "Flora Capensis" of Harvey & Sonder, it presents so much variety in the form of the fruit, as to have been broken up into six genera, some of which will, no doubt, be re-established. Amongst these is *Selenocarpæa*, Eckl. & Zey., to which *H. scandens* belongs, distinguished by its flat pods. These are beautiful objects in *H. scandens*, the membranous valves being veined, and the septum between the cells, one of which is usually empty, is of a silvery appearance, of extreme tenuity, and nerveless. The orbicular flat seeds have a membranous testa, with a very narrow, delicate, hyaline border. The contorted and convolute narrow cotyledons are exceedingly curious.

H. scandens inhabits shady places amongst shrubs near D'Urban, and at Inanda, in Natal. A plant of it was received at the Royal Gardens, Kew, from Mr. J. Medley Wood, Curator of the Botanical Garden of D'Urban, in

1885, which flowered in the Succulent House in the following year, and has continued to do so about midwinter ever since. It now forms a climber on one of the rafters of the house, about fifteen feet high, with a woody stem covered with brown bark. The fragrant flowers are said to vary from white to pinkish, and the racemes are sometimes ten to fifteen-fld.

Descr.—A tall, slender, sparingly branched, woody climber, with pale brown bark; young branches terete, green. *Leaves* scattered, one and a half to two inches long, elliptic- or oblong-lanceolate, acuminate, pale green, penninerved; base acute, narrowed into a slender petiole. *Flowers* in pendulous or ascending sub-corymbiform, loose racemes, fragrant; pedicels ebracteate, slender, one half to nearly an inch long. *Sepals* pale green, oblong, obtuse, two lateral with thickened dorsal wings. *Anthers* large, those of the longest stamens recurved, tips exserted. *Petals* spathulate, white, limb oblong, longer than the claw. *Style* short, stigma capitate. *Pod* one to two and a half inches long, elliptic-oblong, quite flat, very shortly stipitate, one- to two-seeded, tipped by a short, straight style; valves membranous, delicately veined, septum hyaline. *Seeds* orbicular, flat, about one-eighth of an inch in diameter, shortly thickly winged; embryo convolute and contorted, green.—*J. D. H.*

Fig. 1, Calyx and stamens; 2, top of pedicel and pistil; 3, ripe fruit; 4, seed; 5, embryo:—all *enlarged*, except fig. 3, which is of *nat. size*.

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Tab. 7669.

ASTER Piccolii.

Native of Northern China.

Nat. Ord. Compositæ.—Tribe Asteroideæ.

Genus Aster, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 271.)

Aster (Hisutsua) *Piccolii*; herba perennis, 3-pedalis, suberecta, ramosa, foliosa, ramulis pedunculisque teretibus scaberulo-puberulis, foliis sessilibus inferioribus 3–4 poll. longis oblongo-oblanceolatis acutis apiculatis grosse subinæqualiter serratis, superioribus minoribus ovatis subintegris, omnibus supra saturate viridibus nervis impressis margines versus scaberulis, subtus pallidis alte 3-costatis nervis grosse reticulatis, capitulis subcorymbosis 1½–2-poll. diam., pedunculis 3–4 poll longis robustis foliis 1–2 parvis oblongis bracteatis, involucro subhemispherico basi foliolo instructo, bracteis exterioribus 3–4 seriatis, superioribus sensim longioribus late oblongis herbaceis apicibus rotundatis recurvis purpureis, interioribus 1–2-seriatis obovato-oblongis obtusis albis marginibus late membranaceis scariosis fimbriatis, receptaculo conico-hemispherico, fl. radii biseriatis, tubo glanduloso-puberulo, ligula incurvo-patula lineari-oblonga apice 5-denticulata pallide lilacina, fl. radii tubulosis aureis, tubo glanduloso-puberulo, lobis revolutis glabris, acheniis immaturis obovato-oblongis compressis annulo minuto coronatis, pappo 0.

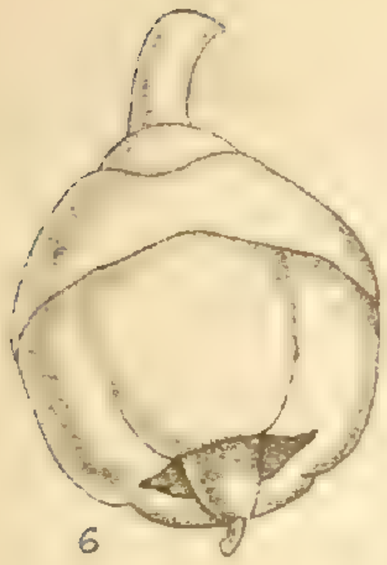
Aster Piccolii is a very interesting as well as handsome plant, being referable to the much misunderstood Chinese genus *Hisutsua*, which was founded by De Candolle (Prodr. xi. 44) on *Matricaria cantoniensis*, Lour., an epappose plant, erroneously but doubtfully referred by its author to the tribe *Senecionideæ*. *Hisutsua* was next taken up by Hooker & Arnott ("Fl. Bot. Beech. Voy.," p. 265), who referred to it as *H. serrata*, a plant which belongs to Blume's genus *Asteromoea*. Bentham followed, in the "Flora of Hong Kong," p. 174, where he brings together as synonyms of *H. cantoniensis*, two very different plants, *H. serrata*, H. & A., and *Asteromoea indica*, Blume, referring all three, erroneously, I think, to the N. American genus *Boltonia* (as *B. indica*, Benth.). With regard to *Asteromoea*, it was founded by Blume on *Aster indicus*, L., a plant differing from *Aster* and *Hisutsua* in its imperfect pappus. It has been referred by Schult. Bip. to the genus *Calimeris* of Nees, which does not differ from *Aster*; quite recently it has been rightly regarded as a section of the latter genus by Mr. Makino in the *Tokyo Botanical Maga-*

zine (July 20th, 1898, p. 60, English part). *Hitsusoa* remains as a sectional name for a few species of *Aster* wholly, or almost wholly, wanting a pappus, and which includes besides *H. cantoniensis*, DC. (syn. *H. pekinensis*, Hance), *A. Piccolii*, one, or perhaps more, unpublished Chinese plants.

Aster Piccolii was raised at the Royal Botanical Gardens, Kew, from seeds collected in the province of Shensi, in E. China, by Father Piccoli, of the Jesuit Mission, Hankow, and which were sent to Kew in 1897 by G. Murray, Esq., F.R.S., Keeper of the Herbarium of the British Museum. It flowered in the Herbaceous collection in September, 1898, and is quite hardy.

Descr.—A stout, leafy, hispidly scaberulous, sub-erect, perennial herb, two to three feet high; stem and branches terete, green. *Leaves* three to four inches long, sessile, oblong, or oblong-lanceolate, acute or apiculate, coarsely unequally serrate, dark green above, paler beneath, three-nerved at the base, nerves impressed above, very stout beneath. *Heads* many, sub-corymbose, two inches in diameter; peduncles with a small oblong leaf at the base of the involucre, otherwise naked, or with one or two sessile leaves at or above the middle. *Involucre* sub-hemispheric, outer bracts three- to four-seriate, broadly oblong, herbaceous, with purple, reflexed, rounded tips; inner one- to two-seriate, obovate-oblong, obtuse, margins broadly scarious, fimbriate. *Receptacle* conico-hemispheric. *Ray-flowers* biseriate, tube (and of the disk-fl.) glandular, ligule linear, lilac-purple. *Disk-flowers* golden-yellow, pappus 0.—*J. D. H.*

Fig. 1, Section of involucre showing the receptacle; 2, inner bract; 3, ray-flower; 4, disk-flower; 5, stamens; 6, style-arms of disk-flowers:—*All enlarged.*



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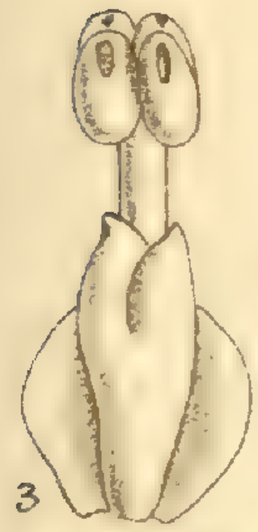

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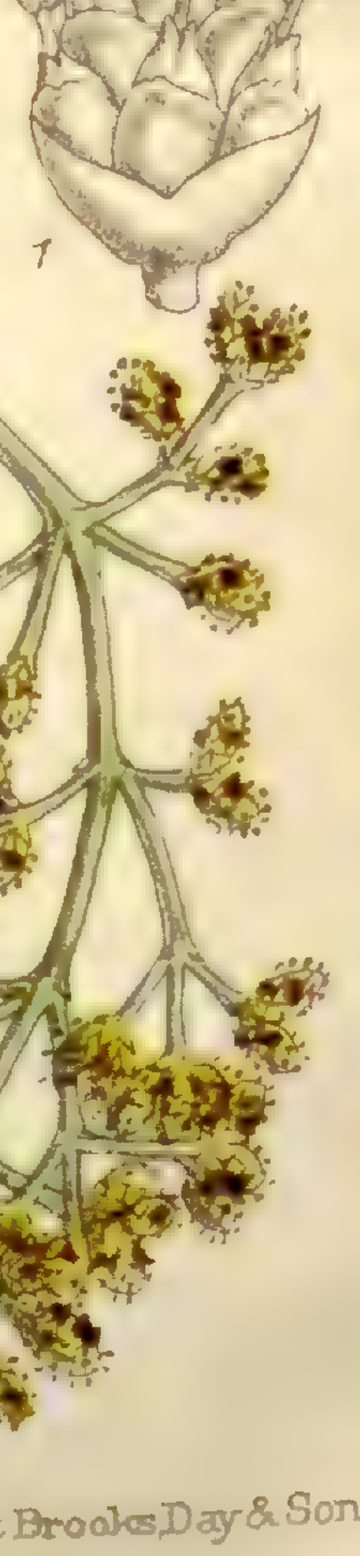

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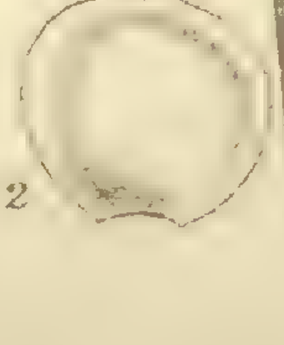

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Tab. 7670.

EPHEDRA altissima.

Native of N. Africa.

Nat. Ord. Gnetaceæ.

Genus Ephedra, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 418.)

Ephedra *altissima*; suffrutex dioica, scandens, ramossissima, caule basi lignoso, ramis dependentibus ramulisque divaricatis oppositis et ternatim verticillatis gracilibus glaucis aliis persistentibus teretibus aliis tenuioribus compressis et tetragonis, foliis 2-natis v. 3–4 natim verticillatis linearibus v. setaceis basi breviter connatis, spicis masculis solitaris binis ternatis fasciculatis v. paniculatis ovoideis v. subglobosis ad $\frac{1}{6}$ poll. diam., bracteis floralibus plurimis late ovatis orbicularibusve membranaceis basi connatis, perianthio obovoideo bilabiato, staminum columna exserta, antheris 1–3 sessilibus, galbulis fœmineis solitariis globosis ad $\frac{1}{4}$ poll. diam., fructiferis majoribus, bracteis 2–3 paribus, infimis minutis supremis multo majoribus ad $\frac{3}{4}$ connatis herbaceis obtusis marginibus membranaceis fimbrillatis demum carnosis rubris, integumento anguste ellipsoideo, apice exserto, tubillo elongato recto v. torto, seminibus 1–3 fere $\frac{1}{3}$ poll. longis, solitariis trigonis v. angulatis, binis plano-convexis.

E. altissima, *Desf. Fl. Atlant.* vol. ii. p. 371, t. 253. *Parl. in DC. Prodr.* vol. xvi. pars ii. p. 356. *C. A. Meyer, Ephed.* p. 67. *Endl. Syn. Conif.* p. 261. *Ball, Spicil. Fl. Marocc.* (*Journ. Linn. Soc. Bot.* vol. xvi) p. 669. *Stapf, Ephed.* p. 46, t. ii. et ix. fig. 1-15. *Gard. Chron.* 1890, vol. i. p. 791, fig. 129.

Upwards of thirty species of *Ephedra* have been described, of which seven are cultivated in the Royal Gardens, but not *E. altissima*, which is not hardy. Of these, the latter is the only one figured from living specimens in any English botanical work; first in the *Gardeners' Chronicle* (l.c.), nine years ago, and now in this magazine; in both cases from a plant cultivated in Commendatore Hanbury's garden at La Mortola, where it is a very attractive shrub when in fruit in December. It is a native of the North African coast, from the city of Marocco to Sus, on the Atlantic side, and extending to Tunis on the Mediterranean

Descr.—A tall, dicœcious, glabrous, scandent, excessively branched, green, almost leafless glaucous green shrub; stem woody at the base, very slender, branches and branchlets drooping or pendulous, opposite or ternately whorled, the ultimate opposite, divaricate, compressed, and four-angled, bearing small ovate acuminate brown scales at the axils. *Leaves* minute, linear or setaceous. *Male*

cones in very lax panicles, solitary, binate, or ternate at the ends of decurved branchlets, sessile, ovoid-oblong, about one-sixth of an inch long, many-fld., yellow, with red-brown anthers; bracts in several series, orbicular; stamens 1-3, exserted from a bilabiate tubular perianth. *Fem. cones* much larger, solitary at the ends of the branchlets, one-half to three-quarters of an inch long; bracts in about three pairs, orbicular, lower pair or pairs very small, uppermost pair much larger, connate for two-thirds of their length, swelling greatly, and forming a red fleshy cup as the seed ripens. *Integument* of the seed thin, tip exserted, terminating in a usually twisted tubulus. *Seeds* one to three, ellipsoid, if solitary angular, if binate plano-convex, if three trigonous.—*J. D. H.*

Fig. 1, Male cone; 2, bracts of the same; 3, bract and perianth; 4, unripe fem. cone; 5, ripe ditto, with peduncle and portion of stem; 6, single ripe fem. cone; 7, seed: all *enlarged*; 8, panicle of male spikes of the *nat. size.*

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Tab. 7671.

MUSSÆNDA capsulifera.

Native of Socotra.

Nat. Ord. Rubiaceæ.—Tribe Mussændeæ.

Genus Mussænda, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 64.)

Mussænda *capsulifera*; frutex, ramulis teretibus calycibus tuboque corollæ strigilloso-puberulis, foliis $1\frac{1}{2}$–$2\frac{1}{2}$ poll. longis elliptico-oblongis obovatis v. rarius oblongo-lanceolatis acutis obtusisve subcoriaceis glaberrimis v. subtus secus nervos puberulis basi in petiolum brevem angustatis læte viridibus, stipulis minutis utrinque solitariis dentiformibus integerrimis, floribus corymboso-cymosis breviter pedicellatis pentameris albis odoris, bracteolis minimis, calycis tubo ovoideo, limbi segmentis linearibus æqualibus persistentibus, corollæ tubo 1–$1\frac{1}{2}$ poll. longo gracili tereti intus piloso, fauce paullo dilatato strigoso-piloso, limbi $\frac{3}{4}$ poll. diam. segmentis patulis cuneiformibus cordatisve apice retusis sinu obtuse cuspidatis alabastro apice 5-cornuto reduplicatim valvatis, staminibus infra faucem corollæ insertis, filamentis brevissimis, antheris linearibus, connectivo apice producto, disco pulvinari, stylo filiformi, stigmatibus brevibus oblongis intus papillosis, capsula parva breviter oblonga calycis segmentis coronata, loculicide polysperma, valvis coriaceis, seminibus striatis angulatis et foveolatis.

M. capsulifera, *Balf. f. in Proc. R. S Edinb.* vol. xi. (1882), p. 836, *et in Trans. Soc. ejusd.* vol. xxxi. (1888), p. 116, Tab. xxix.

Ōd el Ksēh, *Arab.*

A very interesting plant, discovered by Dr. Balfour on hills about 800 feet high in Socotra, in 1880, and since then collected there by Dr. Schweinfurth, and in 1887 by Mr. Bent, from whose specimens seeds were taken, which produced in the Royal Gardens, Kew, the specimen here figured. As pointed out by Dr. Balfour, it differs from the type of *Mussænda*, not only in the absence of a dilated calycine segment, but in the loculicidal capsule. Its very near ally in the latter character is the *M. luteola*, Del., of Nile land. In the obconic flower-bud crowned by the five cusps of the lobes of the corolla, it is quite peculiar.

M. capsulifera has been described as a tree; but judging from the dried specimens I should think it was rather a small shrub, especially as the Kew specimen is fully developed and flowering at eighteen inches high in a stove, first in April, 1899, and now in July. The latter further differs from the description in the quite entire stipules, and

white, not yellow corolla. There is a remarkable difference between the hairs in the outer and inner surfaces of the tube of the corolla. The former are stiff, subulate, acute, the latter are cylindric, flaccid, very thin-walled tubes, surmounted by 1-3 very minute globular cells.

Descr.—An erect shrub, branches slender, terete, as well as the pedicels, calyx, and corolla-tube minutely strigillose. *Leaves* one and a half to two and a half inches long, opposite, oblong-lanceolate or obovate, obtuse or acute, narrowed into a very short petiole, nerves five to six pairs, very slender. *Stipules* very small, triangular, glabrous, eciliate. *Flowers* in terminal corymbose cymes, very shortly pedicelled. *Calyx tube* ovoid, limb of five equal, linear, erect, green segments. *Corolla* many times longer than the calyx-limb, tube very slender, one to one and a half inches long, hairy within, throat slightly dilated; limb three-fourths of an inch broad, of five, cuneiform, or obcordate, truncate, spreading segments, with an obtuse conical tooth in the middle of the sinus of the apex, white, fragrant; in bud the lobes are deeply induplicate-valvate, and together form a deeply five-lobed clavate body, with a truncate, intruded top. *Stamens* sub-sessile in the throat of the corolla-tube, included, linear, connective produced as a short, papillose horn. *Style* very slender, tip cleft into two shortly exserted oblong arms. *Fruit* a loculicidal capsule.—*J. D. H.*

Fig. 1, Portion of stem, with bases of petioles and stipule; 2, calyx and style; 3, corolla laid open; 4, hair from interior of corolla-tube; 5, anther; 6, vertical section of ovary and disk; 7, transverse section of ovary:—*All enlarged.*

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CONTENTS OF No. 656, AUGUST, 1899.

TAB. 7667.—ALOE SCHWEINFURTHII

" 7668.—HELIOPHILA SCANDENS.

" 7669.—ASTER PICCOLII.

" 7670.—EPHEDRA ALTISSIMA.

" 7671.—MUSSÆNDA CAPSULIFERA.

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Tab. 7672.

COLEUS thyrsoideus.

Native of British Central Africa.

Nat. Ord. Labiatæ.—Tribe Ocimoideæ.

Genus Coleus, *Lour.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1176.)

Coleus (paniculatæ) *thyrsoideus*; suffrutex elatus, ramosus, caule ramis petiolis aque inflorescentia laxe pilosis, foliis longe petiolatis amplis ovatis ovato-cordatisve subacutis marginibus grosse inciso- v. lobulato-crenatis, crenis obtusis, supra læte viridibus, utrinque puberulis, subtus pallidioribus, ramulos inflorescentia elongata paniculæformi, cymis, multifloris pedunculos ½–1-pollicares terminantibus, pedicellis brevibus, calycis tubo brevissimo setuloso, segmentis obtusis postico oblongo-obovato lateralibus anticisque lineari-oblongis fere duplo longiore, corollæ ¾-poll. longæ tubo medium versus defracto, fauce modice ampliata, limbi læte cærulei labio inferiore cymbiformi acuto, superiore 4-lobulato lobulis rotundatis, filamentis basi monadelphis labium inferius corollæ æquantibus.

C. thyrsoides, *Baker in Kew Bulletin ined.*

Recent collectors in Eastern and Central tropical Africa have largely extended our knowledge of the Flora of those regions, in every case tending to prove its close affinity with that of British India. In respect of the natural order *Labiatæ* this affinity is very marked, as evidenced by the ocimoid genera *Coleus* and *Plectranthus*, of which there are many undescribed African species in herbaria, over and above those published of late by Schweinfurth and Engler in their monographs of African plants.

Coleus thyrsoideus inhabits the plateau east of the northern extremity of Lake Nyassa, in the Mozambique district, at elevations of six thousand to seven thousand feet, and the Tanganyika plateau at two thousand feet to three thousand feet. Plants of it were raised at the Royal Gardens, Kew, from seeds taken from a Herbarium specimen collected by Mr. A. Whyte in British Central Africa. These, sown in April, 1897, produced bushy plants three feet high, that flowered in a stove in February of the following year. It is a very ornamental plant; the copious branches terminating in racemes six inches to ten inches long, of bright blue flowers.

Descr.—A rather tall, leafy, much branched perennial undershrub, two to three feet high, the branches termi-

nating in narrow, erect, panicle-like racemes six to ten inches long, of bright blue flowers. *Stem*, petioles and inflorescence sparsely pubescent, with spreading hairs. *Lower leaves* up to seven inches long by four broad, ovate-cordate, acuminate, margin coarsely lobulate and crenate, bright green above, and reticulately nerved, paler beneath, with prominent pubescent nerves, base decurrent on the petiole, which is two inches long, or more, stout; upper leaves and lower floral smaller, shorter-petioled, margins more deeply cleft. *Raceme* about three inches broad; branchlets sub-erect or spreading, one inch long or less, bearing dense fld. dichotomous cymes of ten to fifteen shortly pedicelled flowers; bracteoles minute, green. *Calyx* very small, tube sub-globose, hispidulous with stellately spreading hairs; dorsal sepal linear-oblong, puberulous, nearly as long as the corolla-tube below its flexure, lateral about half as long, and two small anticous segments linear, obtuse. *Corolla* about half an inch long, tube suddenly deflexed a little above the short base, then ascending, and again deflexed forming a sub-campanulate laterally compressed throat; mouth two-lipped; upper lip reflexed, obovate, broadly shortly four-cleft, lobes rounded; lower lip rather longer, cymbiform, sub-acute. *Filaments* connate at the base, forming an open concave lamina adnate to throat and base of the lower lip of the corolla.—*J. D. H.*

Fig. 1, Flower; 2, the same, with half the lower lip removed, showing the insertion of the stamens; 3, section of calyx, showing the disk and 4-lobed ovary:—*All enlarged.*

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Tab. 7673.

BEGONIA sinensis.

Native of China and Japan.

Nat. Ord. Begoniaceæ.

Genus Begonia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 841.)

Begonia *sinensis*; pilosula, tubero subgloboso, caule annuo erecto herbaceo ramoso, foliis 3–5-poll. longis oblique ovato-cordatis longe acuminatis basi palmatim 5–9-nerviis grosse sublobulato-dentatis creberrime inæqualiter argute serratis serrulatisque membranaceis supra læte viridibus subtus pallidis junioribus roseo irroratis, petiolis 1–2-poll. longis, stipulis majusculis ovatis acuminatis herbaceis recurvis, axillis sæpe bulbilliferis, pedunculis dichotomis inferioribus petiolis longioribus, cymis bisexualibus, bracteis ovato-lanceolatis caducis, floribus roseis breviuscule pedicellatis ad ¾ poll. latis, fl. masc. bibracteolatis, sepalis 2 fere orbiculatis concavis, petalis 2 multo minoribus ovalibus, fl. fem. ebracteolatis, sepalis 2, petalis 1 v. 2 parvis, staminum columna brevissima, filamentis brevibus, antheris oblongis, ovario obconico 3-gono, stigmatibus reniformibus undique papillosis, placentis 3 bipartitis, segmentis extus tantum ovuliferis, capsula 3-alata, alis 2 angustis tertia trigona.

B. sinensis, *A.DC. in Ann. Soc. Nat.* Ser. iv. vol. ii. p. 125; *in DC. Prodr.* vol. xv. pars i. p. 313. *Hance in Journ. Bot.* vol. xii. (1874) p. 260. *Hemsl. & Forbes in Journ. Linn. Soc.* vol. xxiii. (1887) p. 323.

? B. Evansiana, *Andr. Bot. Rep.* t. 627, *non Bot. Mag.* t. 1473, *nec Bonpl. Malm.* t. 63.

Begonia sine nomine, *Buc'hoz, Coll. Prec. des Fleurs*, Part i. t. xxxv.

Begonia sinensis is well described by A. de Candolle, but is placed in the section *Knesebeckia*, from his character of which it differs in the segments of the placentas being ovuliferous on the outer faces only. He rightly compares it with *B. Evansiana*, Andr. (non Bot. Mag. t. 1473), but overlooks the fact that two plants are confounded under that name. One, the original, figured by Andrews (Bot. Rep. t. 627) said to have been found at the waterfall of Penang, with hardly any stipes to the head of stamens; the other, that of Bonpland (Jard. Malm. t. 63, and of this magazine, t. 1473), a much larger-flowered plant, with a long stipes supporting the head of stamens. Unfortunately de Candolle has selected the latter as Andrews' species. Clarke, in "Flora Brit. Ind.," vol. ii. p. 638, cites *B. sinensis* (from the description) as a synonym of *B. Evansiana*, with which he unites the Bot. Mag. plant and *B. obliqua*, Thunb. With regard to "the waterfall in Penang" which Andrews gives as the habitat of *B. Evansiana*, this is no doubt an error; for C. Curtis, in his Catalogue of the Flowering Plants and Ferns of that

Island, says, "The plant has not been met with here, and could hardly be overlooked." Aiton (Hort. Kew, ed. II. v. 313), who describes *B. Evansiana* as *B. discolor* (quoting both Bot. Rep. and Bot. Mag.), gives China as the native country whence it was introduced in 1804 by the Hon. E. I. Company.

Though retaining the name of *B. sinensis* for this plant, I do not feel sure that it is not *B. Evansiana* of Andrews, from the figure of which it differs only in the deeply irregularly cut margins of the leaves. It is a widely diffused Chinese plant, there being specimens in Kew Herbarium from the neighbourhood of Peking, the provinces of Hupeh and Kwangtung, and Island of Formosa.

Seeds of *B. sinensis*, collected in Yunnan by Dr. Henry, M.A., F.L.S., of the Chinese Imperial Maritime Customs, were received at the Royal Gardens, Kew, in 1898; plants raised from which flowered in October of the following year in a greenhouse.

Descr.—Tuber brown, about the size of a large cob-nut, giving off copious long flexuous brown fibres from its crown. *Stem* one and a half to two feet high, rather slender, glabrous or sparsely pubescent, simple or sparingly branched, pale green. *Leaves* three to five inches long, more or less unequal-sided, ovate-cordate, acuminate, margin acutely lobulate, lobules coarsely, very irregularly, acutely serrate and serrulate, palmately five to nine-nerved at the base, thin, bright green above, paler, and often rose-colrd. beneath, with hairy veins, axils often bulbiferous; petiole one to two inches long; stipules ovate, or ovate-lanceolate, acuminate, green. *Flowers* monœcious, in axillary and terminal peduncled cymes, male rather shortly pedicelled, female with much longer decurved pedicels. *Male fl.* three-fourths of an inch in diam., bright rose-red; sepals two, orbicular-ovate; petals two, very much smaller, oblong; stamens numerous, in a very shortly stipitate head, anthers oblong, obtuse. *Female fl.* rather larger, sepals and petals like the male, but petals broader, very unequal, or one only; styles short, stigmas reniform, papillose all over. *Ovary* with two short and one long wing; placentas bifid, arms ovuliferous on the outer surfaces.—*J. D. H.*

Fig. 1, Portion of stem with stipules and bulbils; 2, staminal columns; 3, styles and stigmas; 4, transverse section of ovary: *all enlarged*; 5, tuber of the *nat. size.*

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Tab. 7674.

CALATHEA picta.

Native of Brazil.

Nat. Ord. Scitamineæ.—Tribe Maranteæ.

Genus Calathea, *G. F. W. Mey*; (*Benth. & Hook. f. Gen. Plant.* vol. iii p. 653.)

Calathea (Eucalathea) *picta*; caule robusto basin versus paucifoliato dein elongato nudo infra pedunculum terminalem crassum bifoliato, foliis 6–8-pollicaribus patentibus petiolatis ovato-oblongis lanceolatisve acuminatis supra saturate viridibus costam versus albo-variegatis, subtus rubro-purpureis, petiolo crasso fusco-purpureo, vaginæ auriculis rotundatis, inflorescentia terminali strobiliformi 4 poll. longa ad 1½-poll. diam., bracteis quaquaversum laxe imbricatis, 1–1½ poll. latis late obovato-rotundatis acutis erecto-patentibus basi breviter vaginantibus stramineis rubro marginatis infima majore, floribus ad 1½ poll. longis bracteis paullo longioribus albis, sepalis linearibus acutis, corollæ tubo sepalis æquilongo lobis æquilongis late ovatis obtusis postico paullo latiore suberecto lateralibus patenti-recurvis, androecii breviter exserti lobis subæquilongis, labello apice 3-lobo.

C. picta, *Hook. f.*

Maranta (Calathea) picta, *Bull. Cat. New Pl.* (1898) No. 324, p. 6, et ic. p. 4.

A very handsome species of a large tropical chiefly S. American genus, of which nothing more is known than that it was imported from Brazil by Mr. Bull, when it received an Award of Merit from the Royal Horticultural Society. The figure given by Mr. Bull in his Catalogue is evidently of a plant in a very young state, with much broader leaves than those of the flowering specimen here figured, and with much more pronounced white markings on the leaves, extending in a fan-shape from the midrib more than half way across the blade. It flowered in a stove in the Royal Gardens, Kew, in December, 1898.

Descr.—Quite glabrous. *Stem* three to four feet high, very stout, with a few leaves towards the base, above which it is naked till just below the peduncle of the inflorescence, where two smaller sub-opposite leaves appear. *Leaves* (lower) six to eight inches long, by two to two and a half broad, oblong or oblong-lanceolate, acuminate, base sub-acute, rather thick, dark velvety green above, with

pale, fan-like blotches of pale green, extending between the nerves from the midrib to about half way across the blade, beneath of a fine vinous purple ; petiole about an inch long, very stout, purplish brown, auricles of sheath rounded. *Spike* cylindric, four inches long by one and a half in diameter, erect ; peduncle two inches long, stout, terete, dirty green. *Bracts* large, loosely imbricate, one to one and a half inches broad, orbicular-obovate, suddenly acute, base shortly sheathing, bright straw-coloured, margined with red.. *Flowers* rather longer than the bracts, white. *Sepals* linear, acute. *Corolla-tube* one and a half inches long, lobes broadly ovate, obtuse.—*J. D. H.*

Fig. 1, Flower-bud with the corolla-lobes spread out; 2, androecium; 3, staminode; 4, top of style and stigma :—*All enlarged.* 5, Reduced view of whole plant.

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Tab. 7675.

ASPARAGUS scandens.

Native of South Africa.

Nat. Ord. Liliaceæ.—Tribe Asparageæ.

Genus Asparagus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 765.)

Asparagus (Aspargopsis) *scandens*; glaberrimus, gracilis, scandens, caule tereti ramoso, ramis dependentibus gracillimis, ramulis simplicibus ½–3-poll. longis multinodis, internodiis cladodiis brevioribus, foliis ad basin ramulorum minutis subulatis vix spinescentibus, cladodiis ⅛–½ poll. longis ternis (floriferis sæpius solitariis) lineari-subulatis leviter incurvis acuminatis trigonis, floribus solitariis, pedicellis cladodiis fere duplo longioribus medio articulatis, floribus ad ¼ poll. latis bisexualibus, perianthii segmentis exterioribus obovato-oblongis obtusis, interioribus paullo angustioribus, staminibus segmentis perianthii æquilongis, antheris oblongis, baccis globosis ⅙–¼ poll. diam. rubris apiculatis monospermis.

A. scandens, *Thunb. Prodr. Fl. Cap.* p. 63; *Fl. Cap. ed. Sch.* p. 334. *Ait. Hort. Kew.* ed. II. vol. ii. p. 273. *Baker in Saund. Refug. Bot.* vol. i. t. 21; *in Journ. Linn. Soc.* vol. xiv. p. 622; *in Fl. Capens.* vol. vi. p. 268. *Wats. in Gard. Chron.* 1898, vol. i. p. 178.

A. pectinatus, *Red. Liliac.* vol. vii. t. 407.

Asparagopsis scandens, *Kunth, Enum. Pl.* vol. v. p. 78.

Dracæna volubilis, *Linn. f. Suppl.* p. 204.

It is noteworthy that of a genus containing nearly 150 reputed species, some long known as ornamental greenhouse plants, easy of culture, not one should have hitherto found a place in "The Botanical Magazine." Fourteen are recorded as cultivated at Kew in 1811, by Aiton, in the second edition of the "Hortus Kewensis." There are now twenty-five in cultivation in European gardens, as enumerated in Mr. Watson's list, published last year in the *Gardener's Chronicle*. The headquarters of the genus is South Africa, from which country Mr. Baker describes forty-four species in the "Flora Capensis" (1896).

A. scandens is a native of the coast region of the Cape Colony, extending from Capetown itself to King William's Town, and inland no further than Somerset. It was introduced into England by the Kew collector, Mr. Mason, in 1795, and flowers and fruits annually in the Royal Gardens in summer and winter respectively. The figure was made from a fruiting specimen sent by Mr. Leech, of the

gardens, Woodhall, Dulwich, under the name of *A. deflexus;* but it is not the *A. deflexus*, Baker, of Angola, nor the var. *deflexus*, Baker, of *A. scandens*, which has zigzag branches and smaller cladodes.

Descr.—A very slender, diffusely branching, unarmed climber, with dependent filiform branches. Ultimate *branchlets* simple, one half to three inches long, sub-trigonous, with few or many internodes bearing normally three cladodes in a whorl, which are longer than the internodes. *Leaves* at the axils of the branches and branchlets, minute, membranous, rarely sub-spinescent. *Cladodes* one-third to half an inch long, rather broadly subulate, acuminate, trigonous, slightly incurved, the flower-bearing often solitary. *Flowers* solitary, rarely binate, axillary, pendulous; pedicels about twice as long as the cladodes, but very variable in length, filiform, jointed about the middle; perianth about a fourth of an inch in diameter, outer segments oblong-obovate, obtuse, spreading and incurved, inner rather smaller and narrower. *Stamens* not longer than the perianth-segments, anthers oblong, yellow. *Ovary* oblong, stigma erect. *Berry* globose, one-sixth to one-fourth of an inch in diam., apiculate, bright red, one-seeded.—*J. D. H.*

Fig. 1, Portion of branchlet with cladodes; 2, flower; 3, ovary; 4, seed; 5, section of do., showing embryo:—*All enlarged.*

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TAB. 7676.

DORSTENIA PHILLIPSIÆ.

Native of Somaliland.

Nat. Ord. URTICACEÆ.—Tribe MOREÆ.

Genus DORSTENIA, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 366.)

DORSTENIA *Phillipsiæ*; caule 3–4-pollicari crassitie digiti minimi erecto lignoso cylindrico basi dilatato conico 1½ poll. diam., superne ½ in. diam., undique grosse cicatricato, apice in ramos breves crassos cylindricos desinente, ramis foliis et inflorescentia terminatis, foliis 1½–2-pollicaribus breviter crasse que petiolatis lineari-oblongis acutis argute dentatis saturate viridibus glaberrimis, costa valida, nervis utrinque 8–10 patulis, pedunculis axillaribus 1½–2-pollicaribus, receptaculo carnoso late campanulato puberulo, disco plano ½–¾ poll. lato margine incrassato in lacinias 6–8 crassas subulatas radiatas flexuosas pollicares fisso, fl. masc. non immersis, perianthio minimo papilloso, staminibus 2, fl. fem. alveolis profundis immersis, stylo filiformi integro exserto, stigmate punctiforme.

D. Phillipsiæ, *Hook. f.*

This remarkable plant belongs to a section of the genus *Dorstenia*, the species of which have the habit of diminutive trees, with very stout, leafless, cylindric, scarred trunks, sparingly, shortly branched above, and terminal clusters of leaves. The type of the section is *D. fœtida*, Schweinf. & Engler (Monogr. Afr. Pl. p. 26) which is *Kosaria fœtida* of Forskahl's Fl. Ægypt. Arab., well figured at tab. 20 of his Icones, a native of Arabia Felix. (Other synonyms are *Cosaria Forskahlii*, Gmel., and *Dorstenia radiata*, Lamk.). A few other species are natives of Nileland, Abyssinia, and Arabia. Amongst the latter is *D. arabica*, Hemsl. (Hook. Ic. Pl. t. 2503), collected in S.W. Arabia by the late Mr. Bent. *D. Phillipsiæ* is closely allied to *D. fœtida*, but differs in the stem being erect from a dilated conical base, in the sharply toothed leaves, in the long peduncles of the receptacle, and in the much larger size of the latter, which has thickened margins, and fewer, much longer rays.

D. Phillipsiæ is another of the new and very interesting plants brought by Mrs. Lort Phillips and Miss Edith Cole from Somaliland, of which *Kleinia pendula*, t. 7659, and *Kalanchoe flammea*, t. 7595, are other examples. A plant was presented to the Botanic Garden of the University

of Cambridge, which flowered there in November, 1898, and was sent to me for figuring by the Curator, Mr. Lynch, A.L.S.

Descr.—*Stem* three and a half inches high, erect from a conical base an inch and a half in diameter, thence tapering upwards to half an inch diam., terminating in short, thick, spreading branches with leafy tips, whole surface of stem pale brown, covered with large quadrate scars. *Leaves* one and a half to two inches long, shortly stoutly petioled, linear-oblong, acute, sharply toothed, dark green, glabrous, paler beneath, nerves eight or ten pairs, spreading, prominent beneath. *Peduncles* axillary, one and a half to two inches long, stout, smooth. *Receptacle* broadly campanulate, with as many ribs as there are arms, disk one half to three-quarters of an inch in diam., flat, margins thickened all round, giving off six to eight subulate, tortuous or flexuous arms an inch long. *Male fl.* minute, superficial on the disk, two-lipped, thickly papillose; stamens two. *Fem. fl. Ovaries* sunk in cavities of the disk; style basal, filiform, quite entire, glandular, exserted. *J D. H.*

Fig. 1, Section of receptacle with male and fem. fl ; 2, upper portion of style; 3, male fl.; 4, ovary :—*All enlarged.*

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BOTANICAL MAGAZINE.

CONTENTS OF No. 657, SEPTEMBER, 1899

TAB. 7672.—COLEUS THYRSOIDEUS.
" 7673.—BEGONIA SINENSIS.
" 7674.—CALATHEA PICTA.
" 7675.—ASPARAGUS SCANDENS.
" 7676.—DORSTENIA PHILLIPSIÆ.

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Tab. 7677.

LONICERA Hildebrandiana.

Native of the Shan Hills, and Munnepore.

Nat. Ord. Caprifoliaceæ.—Tribe Lonicereæ.

Genus Lonicera, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 5.)

Lonicera (Xylosteum) *Hildebrandii*; frutex glaberrimus, alte scandens, ramis ramulisque teretibus, foliis amplis breviter petiolatis late ovatis ovalibus v. orbiculari-oblongis cuspidatis, remote glandulosis, basi rotundatis v. acutis et in petiolum decurrentibus, supra læte viridibus subtus pallidis, nervis utrinque costæ 4–5, petiolo ad ½-poll. longo, floribus geminis pedunculo tereti petiolo subduplo longiore, bracteis dentiformibus, bracteolis minutis ciliolatis, calycis tubo oblongo, limbo 5-dentato, corollæ tubo 4 poll. longo cylindraceo, limbi bilabiati tubo triente breviore, labiis revolutis, superiore cuneiformi 4-fido lobis apice incurvis, inferiore anguste lineari, filamentis gracilibus sparsim puberulis, antheris versatilibus lunatis, stylo glaberrimo, stigmate capitato.

L. Hildebrandiana, *Coll. & Hemsl. in Journ. Linn. Soc.* vol. xxviii. (1891) pp. 6 and 64, t. xi. *N. E. Br. in Gard. Chron.* 1898, vol. ii. p. 210, fig. 58. *Kew Bulletin*, 1898, p. 317.

It is remarkable that by far the largest flowered species of Rose and of Honeysuckle, both almost exclusively genera of temperate climates, should inhabit the same country, and that a thoroughly tropical one (lat. 21° N.). The Rose, *Rosa gigantea*, Collett, has not hitherto flowered in England, though it has been in cultivation since 1888, when it was introduced by seed collected by Col. Sir H. Collett, K.C.B., in the Shan hills. Its discoverer was Dr. George Watt, F.L.S., who found it in Munnepore in 1882.

Lonicera Hildebrandiana, of which also Sir H. Collett is the discoverer, has proved more amenable; it flowered with Mr. Moore, A.L.S., in the Royal Botanic Gardens, Glasnevin, in August, 1898; and profusely in the new south wing of the Temperate House of the Royal Gardens, Kew, in the present year. The plant in the latter case was received in 1894 from A. H. Hildebrand, Esq., C.I.E. Its nearest ally is *L. Braceana*, Hemsl. (Journ. Linn. Soc. l.c. in footnote) a native of the Khasia hills, at elevations of 3000 to 5600 ft., which differs in the much smaller, narrower, acutely acuminate, longer

petioled leaves, smaller flowers with larger calyx-lobes, and a corolla-tube of less than three inches long.

The flowers of *L. Hildebrandiana* change colour with age, which has given rise to strange discrepancies in the descriptions of them. Sir H. Collett was told that the flowers were crimson, and much used for decorating temples. Those of Mr. Moore's plant are described in the *Gardener's Chronicle*, at p. 210, as of a brilliant flame colour, and under fig. 58 as orange-scarlet. In the Kew plant the buds are white, faintly tinged with pink, the fully opened flowers a golden-buff (as in the figure here given) passing into yellow-brown in age. Referring to Mr. Moore, that gentleman kindly informs me that at Glasnevin the flowers were of a soft yellow when first opened, gradually getting darker, so that the fully opened were reddish-orange on the sides fully exposed to the light, and almost wholly of that colour when they fall off.

L. Hildebrandiana is a native of the Shan hills, at an elevation of about 5000 ft., near Pwehla, lat. 21° N., long. 97° E., and, as stated above, of Munnepore.

Descr.—A tall, woody, glabrous climber, with terete branches and branchlets. *Leaves* five to six inches long, broadly ovate, oblong or orbicular-oblong, broadly cuspidate, bright green above, paler beneath, marked with a few distantly scattered brown glands; base rounded, or shortly narrowed into a petiole half an inch long or more; nerves four to five pairs. *Flowers* geminate, on a stout terete peduncle about twice as long as the petiole. *Bracts* very short, tooth-like; bracteoles very minute, ciliolate. *Calyx-tube* oblong, terete; limb very shortly five-toothed. *Corolla* seven inches long; tube four inches, cylindric; lips revolute, upper cuneate, shortly four-lobed, lobes with incurved tips; lower narrowly linear. *Filaments* and style very slender; anthers crescent-shaped. *Stigma* globose. *Fruit* an inch long, ovoid—*J. D. H.*

Fig. 1, Top of peduncle, with bracts, bracteoles, and an ovary; 2, top of filament and anther; 3, top of style and stigma:—*All enlarged.*

M S del. J N Fitch lith

Tab. 7678.

KALANCHOE THYRSIFLORA.

Native of South Africa.

Nat. Ord. Crassulaceæ.

Genus Kalanchoe, *Adans.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 659.)

Kalanchoe *thyrsiflora*; herba crasse carnosa, glaberrima, glauca, caule erecto tereti folioso, foliis decussatim oppositis sessilibus obovato-spathulatis obtusis integerrimis enerviis utrinque concoloribus inferioribus 3–4 poll. longis superioribus gradatim minoribus, inflorescentia terminali sessili oblonga cylindracea 6 poll. longa glauca e racemulis suberectis axi communi densissime confertis constante, floribus ½ poll. longis breviter pedicellatis, bracteolis parvis oblongis obtusis, sepalis corolla ter brevioribus linearibus obtusis, corollæ tubo ovoideo-oblongo tereti glauco-viridi ore constricto, lobis 4 parvis orbiculari-ovatis subacuti-patenti-recurvis intus aureis, disci glandulis oblongis retusis, staminibus 8 ore corollæ biseriatis, filamentis brevibus, antheris fere rotundatis apiculatis, carpellis 3 elongatis in stylos breves attenuatis, stigmatibus parvis subsimplicibus truncatis.

K. thyrsiflora, *Harv. & Sond. Fl. Capens.* vol. ii. p. 380.

K. alternans, *Eckl. & Zey. ex Harv. & Sond. l.c.*

Kalanchoe thyrsiflora was introduced from the Cape of Good Hope into the gardens of Commendatore Hanbury, La Mortola, by whom seeds were distributed to various botanical gardens in 1891. It has been in cultivation at the Royal Gardens, Kew, since 1891, and was first flowered in the Cambridge University Botanical Gardens by Mr. Lynch, to whom I am indebted for sending me the fine specimen here figured. It is a native of the eastern districts of the Cape Colony, where it was found first by Ecklon & Zeyher. There are also specimens in the Kew Herbarium from the Kei and Vaal rivers, from Basutoland, and from Inanda in Natal. In its native country it flowers in May; in England, in December.

Descr.—A very stout, erect, pale glaucous green, quite glabrous, leafy herb, one to two and a half feet high. *Stem* simple, terete, smooth, nearly an inch in diameter below the middle, and half an inch below the inflorescence. *Leaves* decussately opposite, in rather close pairs, lowest three to four inches long, gradually smaller upwards, sessile, obovate-spathulate, quite entire, tip rounded, thick,

fleshy, uniformly coloured on both surfaces. *Inflorescence* an erect, sessile, cylindric, thyrsiform, most dense-flowered glaucous panicle, six to twelve inches high, and three in diameter, formed of crowded, few-flowered, bracteate racemes; bracts oblong or cylindric, obtuse. *Flowers* shortly pedicelled, about half an inch long. *Sepals* about one-third the length of the corolla, linear, obtuse, fleshy. *Corolla-tube* ovoid-oblong, terete, glaucous green, mouth constricted; lobes small, broadly ovate, spreading and recurved, bright yellow within. *Stamens* eight, in two series at the mouth of the corolla; filaments very short, anthers small, broad. Glands oblong, truncate, retuse. *Carpels* three, narrowed into short, recurved styles, with truncate stigmas.—*J. D. H.*

Fig. 1, Top of pedicel with two sepals, hypogynous glands and ovaries; 2, corolla laid open; 3, stamen:—*All enlarged.*

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Tab. 7679.

STYLIDIUM crassifolium.

Native of South-western Australia.

Nat. Ord. Stylidieæ.

Genus Stylidium, *Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. iv. p. 29.)

Stylidium (Thyrsiformes) *crassifolium*; perennee acaule, rhizomate indurato ebulboso, foliis cœspitosis radicalibus 4–8-pollicaribus anguste lineari-oblanceolatis acutis crasse coriaceis glaberrimis, supra saturate viridibus enerviis, subtus pallidis obtuse subcarinatis, scapo robusto, inflorescentia angusta valde elongata 1–2 pedali glanduloso-pubescente multi-laxiflora basi ramosa, ramis brevibus paucifloris, bracteis bracteolisque parvis subulatis, floribus breviter pedicellatis, ovario stricto $\frac{1}{2}$–$\frac{3}{4}$ poll. longo, calycis bilabiati lobis brevibus acutis, petalis paribus oppositis patulis dispositis subæqualibus oblongo-lanceolatis acutis roseis basi appendicibus setaceis instructis, labello parvo oblongo decurvo appendicibus utrinque 2 patentibus setiformibus instructo, columna apice (ad basin antherarum) fimbriata, capsula lineari v. lineari-oblongi $\frac{1}{2}$–$\frac{3}{4}$ poll. longa.

S. crassifolium, *Br. Prodr.* p. 571. *DC. Prodr.* vol. vii. p. 335. *Sond. in Lehm. Pl. Preiss.* vol. i. p. 384. *Benth. Fl. Austral.* vol. iv. p. 29.

S. leptobotrys, *DC. l.c.* p. 783. *Sond. l.c.* p. 384?

Dampiera? innundata, *De Vriese in Lehm. Pl. Preiss.* vol. i. p. 404.

Of nearly nĭnety species of *Stylidium* described by Bentham in the "Flora Australiensis," *S. crassifolium* is the twelfth that has been figured in this magazine. It is a native of the south-western extremity of Australia, extending from Phillips flats on the south coast, westward and northward to Fremantle on the west coast.

It was raised at the Royal Gardens, Kew, from seeds received in 1898 from Quartermaster-Sergeant B. T. Goadby, of the West Australian Engineers, collected at Albany, King George's Sound, where it grows on wet land, flowering in November. It thrives in a greenhouse, producing in spring racemes nearly two feet high. Bentham describes it as having no appendages, or very small ones on the lip, but there is a pair of long setiform ones on either side of that organ in the specimen here figured.

Descr.—A tall, rigid, erect, nearly glabrous herb, with radical leaves four to eight inches long, and a narrow inflorescence up to two feet long. *Leaves* tufted, narrowly

linear-oblanceolate, acute, thickly coriaceous, hard, as much as half an inch at the broadest part, concave, dark green, and shining on the upper surface, pale, and almost green beneath. *Scape* with the sub-paniculate raceme erect or inclined; branches very short, rather distant, about three-flowered; bracts and bracteoles small, coriaceous, green. *Calyx-tube* three-quarters of an inch long, cylindric, pubescent, limb small, two-lipped, lobes free, dentiform. *Corolla* of four spreading, oblong, pink lobes in opposite, spreading pairs, each about half an inch long, bearing a setiform appendage, and a very small, obovate, deflexed lip, armed with a pair of bristles on either side towards the base. *Column* sigmoid, about as long as the petals, white. *Anthers* brown. *Capsule* narrow, half an inch long, or rather longer.—*J. D. H.*

Fig. 1, Branch of panicle with buds and flower; 2, fruit, and 3, dorsal view of anthers:—*All enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 7680.

BERLANDIERA tomentosa.

Native of the Southern United States.

Nat. Ord. Compositæ.—Tribe Helianthoideæ.

Genus Berlandiera, *DC.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 350.)

Berlandiera *tomentosa*; tota pannoso-tomentosa, canescens v. glabrata, caule 1–1½-pedali simplici v. ramoso, foliis inferioribus oblongis v. ovato-oblongis obtusis crenatis basi in petiolum sæpissime elongatum superne anguste alatum angustatis, supra læte viridibus, nervis subtus validis, supremis sessilibus dentatis, capitulis subcorymbosis 1½–2 poll. latis, involucri hemispherici bracteis orbicularibus herbaceis villosis, fl. radii ad 8 fem., corollae tubo brevissimo limbo aureo ovali-oblongo 2-lobo, lobis rotundatis, styli ramis filiformibus elongatis obtusis brunneis, fl. disci masc., ovario gracili stipitiformi elongato piloso, corollæ tubo cylindraceo glaberrimo lobis 4 brevibus intus pubescentibus brunneis, antheris exsertis, stylo columnari integro pubescente, achæniis late obovatis compressis facie interiore villosis.

B. tomentosa, *Nutt. in Trans. Am. Phil. Soc.* Ser. ii. vol. vii. (1841) p. 313. *Torr. & Gr. Fl. N. Am.* vol. ii. p. 282. *Chapm. Fl. S. U. States.* p. 221. *Gray Synopt. Flor. N. Am.* vol. ii. pt. i. p. 243.

B. pumila, *Nutt. l.c.*

Silphium pumilum, *Michx. Fl. Bor. Am.* vol. ii. p. 246.

S. tomentosum pumilum & reticulatum? *Pursh. Fl. Am. Sept.* vol. ii. pp. 578, 579.

S. asteriscus, *var.* pumilum, *Wood, Class-book of Bot.* p. 442.

Polymnia caroliniana, *Poir. Dict.* vol. v. p. 505.

J. L. Berlandier was a Genevese botanist who explored parts of Texas and Mexico, and who died at Matamoros on the Gulf of Mexico in 1851. The genus named after him consists of four species, natives of the south-eastern United States. *B. tomentosa* inhabits Pine barrens from N. Carolina to Florida, and westward to Arkansas and Missouri. Seeds of it were presented to the Royal Gardens, Kew, in 1898, by the Rev. L. H. Lighthipe of Jacksonville, Florida, plants from which flowered in a cool greenhouse in May and June of this year. The flowers proved very persistent.

Descr.—A slender, herbaceous, sparsely leafy perennial, twelve to twenty-four inches high, more or less hoary or cottony, or glabrate. *Lower leaves* oblong, or ovate-oblong, obtuse, crenate, narrowed into a petiole two to

three inches long, which is winged above the middle, pale green above, with a reddish costa, and five to seven pairs of slender nerves, paler beneath, with stouter nerves; upper leaves small, sessile, acutely toothed. *Heads* few, in a terminal corymb, rather shortly peduncled, one and a half to two inches in diameter. *Involucre* of about three series of orbicular, green, spreading, tomentose bracts. *Ray-flowers* about eight, tube of corolla hardly any; limb broadly ovate-oblong, ending in two rounded lobes; style-arms two, filiform, brown. *Disk-flowers* enveloped in green bracteoles, stipitate by the imperfect, slender, cylindric, hairy ovary; corolla-lobes four, dark red-brown, pubescent. *Style* columnar, entire, pubescent. *Achenes* broadly obovate, compressed, villous on the inner surface.—*J. D. H.*

Fig. 1, Invol. bract and ray-flower; 2, bracteole of outer series of disk-flowers; 3, inner disk-flower and bracteole; 4, anthers; 5, style of disk-flower:—*All enlarged.*

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M.S.del. J.N.Fitch.lith.

Tab. 7681.

RHODODENDRON DILATATUM.

Native of Japan.

Nat. Ord. Ericaceæ.—Tribe Rhodoreæ.

Genus Rhododendron, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 599.)

Rhododendron (Azalea) *dilatatum*; frutex fere glaberrimus, ramis ramulisque ternis gracilibus cortice atro-fusco indutis, novellis roseis, foliis apicibus ramulorum solum evolutis ternis petiolatis 1½–2-pollicaribus rhombeo-ovatis subacutis basi acutis tenuiter chartaceis supra læte viridibus sanguineo-tinctis, subtus pallide viridibus subglaucis, nervis utrinque costæ 3–5 supra gracillimis subtus prominulis ultimis reticulatis, petiolo ⅓–½ poll. longo gracile roseo, floribus præcocibus apicibus ramulorum binis, geminis aphyllis bracteis multiseriatim imbricatis ovatis viridibus demum recurvis tectis, pedicellis breviusculis rubris setulosis et glandulosis, calyce truncato glanduloso, corolla profunde bilabiata rosea 2-poll. diam., intus basin versus ecolorata, tubo brevi campanulato, labio superiore ad medium trifido lobis ovato-oblongis obtusis, inferiore bipartito segmentis oblongis obtusis, staminibus 5 declinatis filamentis 3 corolla longioribus 2 brevioribus omnibus glaberrimis roseis, antheris parvis fuscis, ovario oblongo lepidoto, stylo filiformi declinato stigmate minuto.

R. dilatatum, *Miq. Ann. Mus. Bot. Lugd. Bat.* vol. i. p. 34. *Franch. & Sav. Enum. Pl. Jap.* vol. ii. p. 164. *Maxim. Rhod. As. Or. in Mem. Acad. Petersb.* ser. vii. vol. xvi. No. 9, pp. 25, 27.

Azalea dilatata, *Hort.*

The nearest, and indeed very near ally of *Rhododendron dilatatum* is *R. rhombicum*, Miq. (see tab. 6972), also a native of Japan, which differs in being of a stouter habit, with more persistent pubescent leaves, hirsute branchlets, smaller flowers, ten much shorter stamens, and the ovary and lower part of the style villous.

R. dilatatum was discovered by Siebold early in the century. There are native specimens in the Kew Herbarium from the mountains of Okayama and Hakone, in the province of Sagami, Nippon; and a cultivated one from Messrs. Veitch, dated April, 1885, who were, no doubt, the introducers of the species into England. The drawing here given is from a plant which flowered in the Royal Gardens, Kew, in April, 1899, and was in full leaf in June of the same year. It was procured in 1893 from the Yokohama Gardeners' Association in Japan, and appears to be hardy. Both foliage and flowers are quite inodorous.

October 1st, 1899.

Descr.—A small, much-branched, nearly glabrous bush. *Branches* very slender, leafy at the tips only, covered with a very dark brown bark, young branchlets red. *Leaves* ternate, one and a half to two inches long, rhombic-ovate, sub-acute, base cuneate, thin in texture, bright green above clouded with blood-red, very pale beneath, nerves three to five pairs, very slender above, stouter, and with reticulate branches beneath; petiole one-third to one-half an inch, long, very slender, red. *Inflorescence* terminal, clothed with imbricating, ovate, pale green, recurved, glabrous bracts. *Flowers* geminate; pedicels short, red, setulose, and glandular. *Calyx* truncate. *Corolla* two inches in diameter, deeply two-lipped, bright rose colour, fading to white towards the base within, tube very short; lips divaricate, upper erect, three-cleft to the middle, lobes shortly ovate-oblong, obtuse; lower lip deflexed, bipartite, segments oblong, obtuse. *Stamens* 5, declinate and incurved, filaments very slender, rose-red, three longer than the corolla, two upper shorter; anthers small, pale brown. *Ovary* oblong, truncate, glandular; style very slender, stigma minute.—*J. D. H.*

Fig. 1, Pedicel, calyx, and ovary; 2 and 3, back and front view of anther:—*All enlarged.*

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Tab. 7682.

CYPHOMANDRA BETACEA.

N. Grenada and Peru.

Nat. Ord. Solanaceæ.—Tribe Solaneæ.

Genus Cyphomandra, *Sendtn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 889.)

Cyphomandra *betacea*; arbuscula molliter pubescens, contusa odore ingrato, caule superne ramoso, cortice pallido, ramis crassis, foliis amplis longe petiolatis 4–8 poll. longis ovato-cordatis acuminatis mollibus supra luride viridibus subtus pallidis, nervis utrinque costæ 5–9 subtus prominulis pallide purpureis, petiolo 4–12 poll. longo crassiusculo tereti, cymis sæpius supra- vel extra-alaribus corymbiformibus laxe di- tri-chotome ramosis, pedunculo valido petiolo breviore viridi, floribus longiuscule pedicellatis, pedicellis flexuosis fructiferis elongatis crassis, calyce parvo crateriforme 5-lobo, lobis rotundatis, corolla pollicem diametro rotato-campanulata alba roseo pallide tincta, segmentis lanceolatis recurvis, filamentis brevibus, antheris oblongis corolla dimidio brevioribus, stylo brevi columnari, stigmate simplici, bacca carnosa 2–3-pollicari ovoidea flavida v. aurea rubro-tincta 2-loculari polysperma, seminibus orbicularibus compressis.

C. betacea, *Sendtn. in Flora*, vol. xxviii. (1845) p. 172, t. 1; *et in Mart. Fl. Bras.* vol. x. p. 119. *Dunal in DC. Prodr.* vol. xiii. pars i. p. 393. *Morris in Gard. Chron.* 1884, vol. i. p. 510; 1887, vol. i. p. 386, fig. 77; 1899, vol. i. p. 105, fig. 104 (the Kew plant). *Journ. Hortic. ser.* 3, vol. xxxi. p. 470. *Kew Bulletin*, Aug. 1887, p. 2. *Maiden in Agric. Gazette N.S. Wales*, vol. v. (1894) p. 214, *cum ic.*

Solanum betaceum, *Cav. Ic.* vol. vi. p. 15, t. 524. *Anal. Hist. Nat. Madr.* vol. i. (1799) p. 44. *Ait. Hort. Kew.* ed. ii. vol. i. p. 400. *Dunal, Hist. Solan.* p. 169. *Andrews, Bot. Rep.* vol. viii. t. 511. *Rev. Hortic.* 1880, p. 150; 1881, p. 470.

S. crassifolium, *Ortega, Hort. Matr. Dec.* ix. p. 117.

S. obliquum, *Bert. in Herb. DC. ex Dunal in DC. Prodr. l.c.*

Pionandra betacea, *Miers in Hook. Lond. Journ. Bot.* vol. iv. (1845) p. 358.

Cyphomandra betacea is the Tomate de la Paz of Mexico and Central America, known also as the Tree Tomato and Vegetable Mercury in the West Indies, the latter name being given for the real or supposed value of the fruit in relieving disorders of the liver. It is a native of New Grenada, and Peru, whence it has been introduced into other parts of tropical and sub-tropical S. America, the West Indies, Spain, and, of late years, into India, China, Australia, and S. Africa. Its extended cultivation is due to the facility with which it is grown, adapting itself to many soils and climates, to the great beauty of its abundantly produced edible fruits,

and to the value of these, when perfectly ripe, as a substitute for the Tomato, for making preserves, and even for dessert. In the latter case it is the sub-acid pulp alone which is eaten. This resembles that of *Passiflora edulis*, Sims (t. 1989), but whereas the rind of the fruit of the *Passiflora* is tasteless, that of *Cyphomandra* is very disagreeable. Other differences between the fruits of these plants are that the pulp of that of *Cyphomandra* is less watery, more acid, and has an aromatic flavour.

According to Aiton, *Cyphomandra betacea* was introduced into England in 1803, by Sir James Edward Smith. It has been long (perhaps ever since that date) in cultivation at Kew, where it flowers and ripens its fruit abundantly in the Temperate House.

Descr.—A small, erect tree, with pale bark, soft wood, and stout branches. *Leaves* four to eight inches long, ovate-cordate, acuminate, softly puberulous, lurid geeen above, paler beneath, with five to nine pairs of spreading nerves; petiole four to twelve inches long, stout, terete, pubescent. *Cymes* up to five inches broad, subcorymbiform, di- tri-chotomously divided; peduncle shorter than the petiole, green; pedicels an inch long, flexuous, fruiting thickened upwards. *Flowers* an inch in diameter. *Calyx* cupular, obtusely 5-lobed. *Corolla* campanulate-rotate; segments recurved, lanceolate, white with a pink tinge. *Filaments* much shorter than the oblong anthers, which are about half as long as the corolla. *Style* short, columnar, stigma small. *Berry* two to three inches long, ovoid, fleshy, orange-yellow, often suffused with red, two-celled, many-seeded. *Seeds* orbicular, compressed, narrowly winged all round.—*J. D. H.*

Fig. 1, Calyx, stamens, and style; 2, stamen; 3, pistil: *all enlarged*; 4, seed of *nat. size*; 5, the same, *enlarged*.

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Tab. 7683.

CARLUDOVICA Laucheana.

Native of New Grenada.

Nat. Ord. Pandaneæ.—Tribe Carludoviceæ.

Genus Carludovica, *Ruiz & Pav.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 953.)

Carludovica *Laucheana*; caule brevissimo, foliis subdistichis cuneiformi-oblongis basi acutis læte viridibus coriaceis profunde bifidis laciniis linearibus-oblongis acuminatis plicatim 5–7-costatis, petiolo lamina breviore in vaginam margine scariosam brunneam sensim desinente, pedunculo brevi crasso, cataphyllis oblongo-lanceolatis acutis scariosis brunneis, spadice 4–6-pollicari oblongo cylindraceo 2–2½ poll. diam. staminodiis flexuosis albis densissime crinito, spathis spadice subæquilongis oblongo-lanceolatis acuminatis pallide primulinis apice fuscis, fl. masc. basi compresso cuneato, perianthii segmentis ad 12 brevibus ovatis recurvis, staminibus perplurimis, antheris oblongis filamento basi mammillæformi paullo longioribus, fl. fem. perianthii segmentis 4 orbiculari-ovatis cuspidatis, stigmatibus 4 sessilibus brevibus uncinatim recurvis marginibus glandulosis, staminodiis longissimis filiformibus flexuosis apicibus incrassatis.

Salmia Laucheana, *Hort. Sand. ex Gard. Chron.* 1893, vol. i. pp. 442, 481, fig. 72. *Rev. Hort. Belg.* vol. xix. (1893) p. 194, fig. 39.

Of the large and curious genus *Carludovica*, containing thirty-eight described species, according to the census in the Kew Index, very few are to be found in cultivation. Five only before that here figured have appeared in this Magazine, namely, *C. latifolia*, Ruiz & Pavon, t. 2950–1 (*Ludovia latifolia*, Pers.), *C. ensiformis*, Hk. f. t. 6418, *C. rotundifolia*, Wendl. t. 7083, *C. caput-Medusæ*, t. 7118, and *C. microcephala*, Hort. Berol. t. 7263. In the character of the bifid leaf *C. Laucheana* agrees with *C. ensiformis*, but it differs in the much shorter, broader leaf-lobes with many more nerves in each, in the stouter, shorter petiole and peduncle, in the very much larger spadix, and in the uncinate stigmas. Another nearly allied species is *C. plicata*, Klotzsch (Linnæa, vol. xx. (1847) p. 468), which has more oblong leaves, with longer petioles.

C. Laucheana was imported from Antioquia, New Grenada, by Messrs. Sander & Co., of St. Albans. A plant of it received from that firm by the Royal Gardens,

Kew, in 1895, flowered in a stove in May, 1897. As in other species of the genus, it is remarkable for the envelope of milk-white, thread-like staminodes of the female flowers, which thickly clothe the spadix, wholly concealing the flowers. The function of this envelope may possibly be, like the spathe of many *Aroideæ*, to protect the flowers from the attacks of insects from without, whilst fertilization is effected under it by minute pollen-feeding insects.

Descr.—*Stem* very short. *Leaves* eight to twelve inches long, cuneiformly oblong, coriaceous, bright green, split to the middle or below it into two linear-oblong, acuminate lobes, each plicately five to seven-ribbed, base acute; petiole stout, shorter than the blade, dilating gradually downwards into a coriaceous sheath, with narrow, scarious, brown margins. *Peduncle* very short, stout, erect, bearing below several brown, scarious sheaths, and under the spadix two oblong-lanceolate, acuminate spathes, six inches long, of a pale yellowish colour, with scarious tips. *Spadix* as long as the spathes, oblong, cylindric, two to two and a half inches in diameter, including the dense envelope of waving, white, filiform staminodes. *Male fl.* cuneiform, fleshy, with about twelve marginal, broadly ovate, short, recurved lobes. *Stamens* very many, crowded, filaments rather shorter than the oblong (swollen, with short, tender tips) anthers. *Fem. fl.* with four, small, very broadly ovate, cuspidate, erect, fleshy lobes; staminodes four, upward of an inch long, white, flexuous, tips thickened. *Stigmas* four, unciuate, laterally compressed, glandular on the margin.—*J. D. H.*

Fig. 1, Petiole and inflorescence of *nat. size*; 2, male fl.; 3, stamens; 4, fem. fl.: *all enlarged*:—5, *reduced* view of whole plant.

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Tab. 7684.

HIDALGOA Wercklei.

Native of Costa Rica.

Nat. Ord. Compositæ.—Tribe Helianthoideæ.

Genus Hidalgoa, *Llav. & Lex.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 386.)

Hidalgoa *Wercklei*; herba suffrnticosa, ope petiolorum scandens, fere glaberrima, foliis oppositis longe petiolatis ternatim pinnatisectis supra parce pilosis, pinnulis 3 late ovatis trisectis grosse dentato-serratis, dentibus apice discoloribus, petiolo 1½–2-pollicari basin versus volubili, stipulis orbicularibus herbaceis, capitulis 2½ poll. diam. axillaribus solitariis, pedunculo 3–4-pollicari nudo, involucri bracteis herbaceis biseriatis linearibus, exterioribus 5 stellatim patentibus, interioribus duplo longioribus et latioribus obtusis in tubum cylindricum dispositis, fl. radii ad 10 femineis, corollæ tubo brevissimo, limbo patente oblongo 3-dentato miniato, fl. disci capitulo exsertis flavidis, tubo angusto elongato lobis 5 revolutis intus papillosis, antheris elongatis basi obtusis connectivo apice breviter unguiculato, styli fl. radii ramis filiformibus longe exsertis, fl. disci stylo nisi basin versus ubique papilloso apice breviter bilobo, achæniis apice bicornutis, disci angustis sterilibus, radii latioribus compressis.

Childsia Wercklei, *Childs, Cat. Rar. Fl.* &c., 1899, p. 1 *cum ic.* (*New York.*)

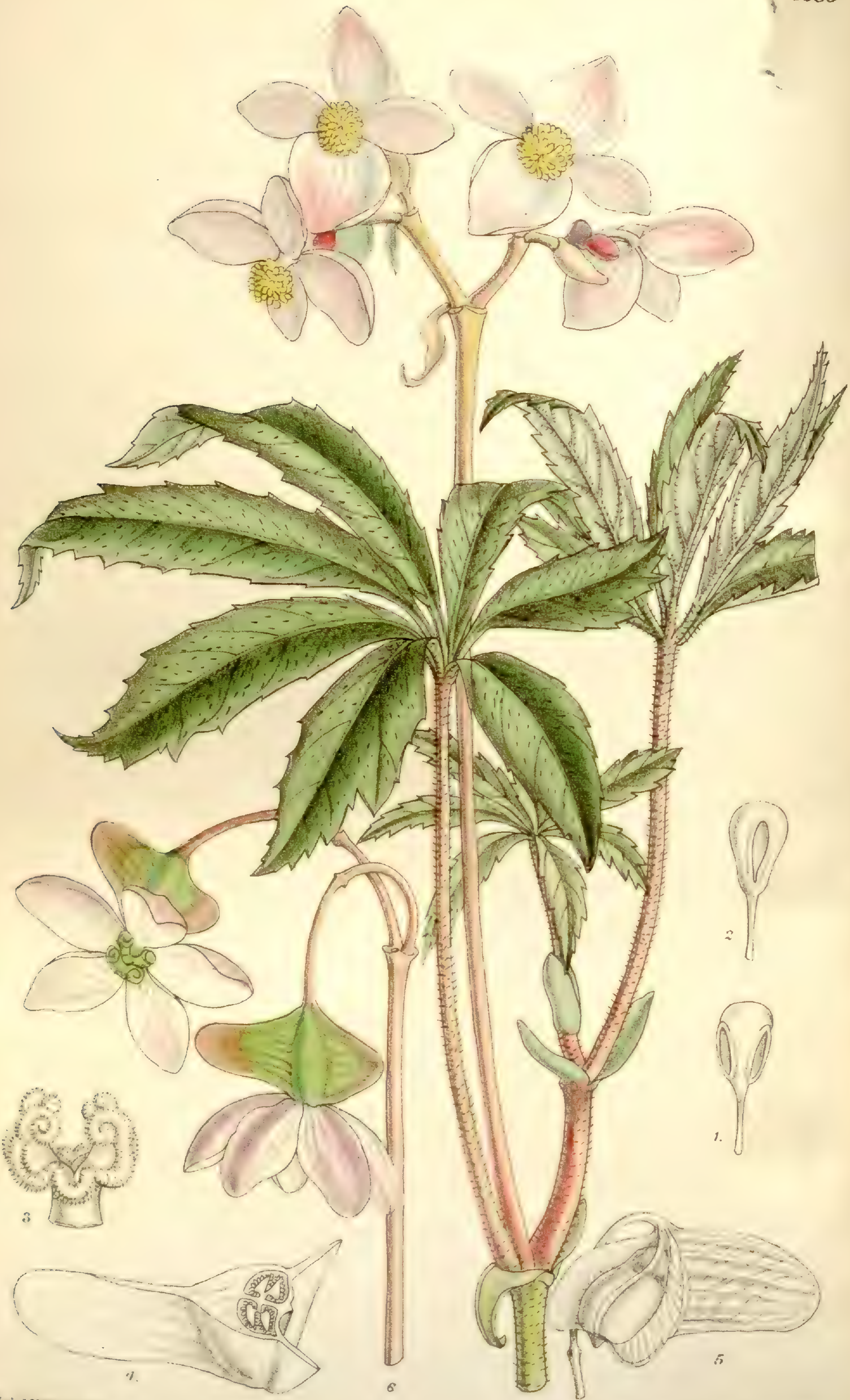
The genus *Hidalgoa* is closely allied to *Dahlia* and *Coreopsis*, but differs from both in habit, in the large fertile achene of the ray-flowers, and in the sterile disk-flowers, the styles of which are entire or very shortly two-lobed. Only two species have hitherto been recognized, the *H. ternata*, Llav. & Lex. of Mexico and Central America, and a closely allied one (or possibly a variety) from Guayaquil. From both of these *H. Wercklei* differs in its more compound leaves and much larger heads, the ray-flowers of which are bright scarlet.

According to Mr. John Lewis Childs, of Floral Park, New York, who published it as *Childsia Wercklei*, with a coloured illustration, on the back of his sale-catalogue, cited above, it is a native of Costa Rica, where it was discovered on a mountain, by Mr. Carlo Werckle, in 1898. A plant was sent to the Royal Gardens, Kew, by Mr. J. L. Childs, which flowered in a greenhouse in July, 1899.

Descr.—A tall, suffruticose, much-branched herb, climbing by means of the petioles, which twist round objects of support, glabrous, except for a slight pubescence on the

upper surface of the leaves. *Leaves* opposite, long petioled, broadly ovate, pinnately ternatisect, one and a half to two and a half inches long, by two across the two lower pinnules, which are ternatisect and deeply toothed or serrate, the teeth tipped with red-brown, which colour sometimes extends all round the leaf-lobes ; petiole one and a half to two inches long, coiled at the base. *Peduncle* axillary, solitary, as long as the leaves or longer, erect, naked, bearing a solitary head two and a half inches in diameter. *Involucral bracts* herbaceous, biseriate, linear, obtuse ; outer series five, stellately spreading, about half as long and broad as the inner, which are erect, connivent in a cylindric tube three-fourths of an inch long. *Ray-flowers* about 10 ; corolla-tube very short, limb spreading, oblong, two-nerved, three-toothed, bright scarlet above, dirty yellow beneath ; style-arms long, very slender ; achene fertile, oblong, flattened, tip two-horned ; pappus 0. *Disk-flowers* many, yellow ; corolla-tube long, slender, lobes five, recurved ; anthers elongate, base obtuse ; style slender, pubescent, except towards the base, tip shortly bifid ; achene slender, cylindric, barren ; pappus 0.—*J. D. H.*

Fig. 1, Ray-flower and invol. bract, with limb removed ; 2, disk-flower ; 3, stamen ; 4, style :—*All enlarged.*



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Tab. 7685.

BEGONIA Hemsleyana.

Native of Yunnan.

Nat. Ord. Begoniaceæ.

Genus Begonia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 841.)

Begonia (Platycentrum) *Hemsleyana*; dense cæspitosa, radice tuberosa, tuberibus carnosis fasciculatis fusiformibus, caulibus 1–1½-pedalibus parce ramosis petiolisque gracilibus elongatis erectis puberulis pallide roseis, foliis palmatipartitis, segmentis radiatis lanceolatis acuminatis remote serratis sessilibus v. in petiolulum brevem angustatis glaberrimis supra læte viridibus rubro anguste marginatis penninerviis, stipulis ovato-lanceolatis herbaceis, pedunculis axillaribus petiolis longioribus glaberrimis, cymis dichotomis paucifloris, bracteis lanceolatis caducis, floribus roseis, masc. sepalis 2 ovato-rotundatis subacutis, petalis 2 multo minoribus oblongo-ovatis, staminibus in capitulum globosum brevissime stipitatum dense confertis, filamentis gracilibus antheris pyriformibus apice rotundatis æquilongis, loculis lateralibus, fl. fem. longius pedicellatis nutantibus, perianthii segmentis 5 æqualibus oblongis obtusis, ovario 2-loculari 3-alato, ala una multo majore oblonga apice rotundata, stylis 2 subsessilibus stigmatorum crucibus brevibus spiraliter incurvis, fascia stigmatosa continua, placentis septo medio insertis bipartitis undique ovuliferis, capsula latiore quam longa pendula 3-alata, alis 2 brevibus tertia fere pollicari oblonga apice rotundata nervis validis costata, dehiscentia inter alas breviores imperfecte operculari.

The discovery of a palmatipartite-leaved *Begonia* in the Old World is a very remarkable one, the few known species with this character being all American. *B. Hemsleyana* has, however, no affinity with the latter; it belongs to the section *Platycentrum* of A. de Candolle (Prodr. vol. xv. p. 347), which is represented by eighteen species in India, and is regarded as a sub-genus by C. B. Clarke, in his paper on Indian Begonias (Journ. Linn. Soc. vol. xviii. p. 118). Its nearest ally is an undescribed Chinese species, also discovered by Dr. Henry, in which the leaves are orbicular, and seven to nine-lobed to the middle.

B. Hemsleyana was raised in the Royal Gardens, Kew, from seed collected at Mengtse, in Yunnan, at an elevation of four thousand to five thousand feet, by Dr. Henry, F.L.S., in 1898, who describes it as a very pretty plant, a foot to a foot and a half high. It flowered freely and

continuously in a warm greenhouse, from April, 1899, onwards, forming a compact mass of foliage, suggestive of a well-furnished Hellebore. I have named it in commemoration of the services rendered to botanical science by the researches into the Chinese Flora of my friend, Mr. W. B. Hemsley, F.R.S.

Descr.—*Roots* of fleshy, fascicled, fusiform tubers, with copious, black rootlets. *Stem* one to one and a half feet high, densely tufted, erect, sparingly branched, leafy, succulent, rose-pink, slightly hairy. *Leaves* erect, long-petioled, orbicular, four to five inches in diameter, palmati-partite or sub-pedate; segments seven to nine, radiating from the top of the peduncle, sessile or narrowed into a short petiolule, lanceolate, acuminate, irregularly, rather distantly serrate, lateral pair sometimes lobulate, bright green above, pale beneath, young sometimes edged with red; petiole three to four inches long, erect, glabrous, rose-pink; stipules half an inch long, oblong-lanceolate, herbaceous. *Cyme* dichotomous, few flowered, monœcious; bracts lanceolate, caducous; pedicels of fem. lengthening and decurved in fruit. *Male fl.* one and a quarter inch diam.; sepals orbicular-ovate, pale pink, darker coloured towards the tips; petals half as large, oblong. *Stamens* very many, capitate, filaments short, crowded on a very short stipes; anthers pyriform, tip rounded, slits narrow, lateral. *Fem. fl.*:—perianth rather larger than the male; segments five, sub-equal, oblong, obtuse; style very short, stigmas two, hippocrepiform, with circinately incurved horns, stigmatic band continuous. *Capsule* on an elongate, decurved pedicel two inches long, broader than long, coriaceous, three-winged, dorsal wing much the longest, oblong, tip rounded, strongly many-ribbed, dehiscence imperfectly opercular between the narrow wings.—*J. D. H.*

Figs. 1 and 2, Anthers; 3, stigmas; 4, section of ovary; 5, capsule:—*All enlarged.*

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Tab. 7686.

RHODODENDRON MODESTUM.

Native of the Sikkim Himalaya.

Nat. Ord. Ericaceæ.—Tribe Rhodoreæ.

Genus Rhododendron, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 599.)

Rhododendron (Eurhododendron) *modestum*; frutex glaberrimus, ramulis erectis foliosis, foliis 2–3-pollicaribus breviter petiolatis oblongis acutis apiculatis basi acutis cuneatisve coriaceis, supra saturate viridibus sparsim glanduloso-puberulis, subtus fulvo-viridibus lepidotis, nervis utrinque costæ 8–10 supra inconspicuis subtus vix prominulis costa subtus valida in mucronem obtusum producta, gemmis floriferis basi foliatis pauci-bracteatis, floribus 6–10 laxe umbellatis pendulis, pedicellis ad ½-poll. longis calyceque lepidotis, calycis segmentis inæquilongis oblongis aristato-acuminatis posticis ⅓-poll. longis, anticis fere duplo brevioribus, corolla infundibulari 5-loba pallide rosea, lobis rotundatis tubo paullo brevioribus 3 posticis sanguineo maculatis, staminibus 10 corolla paullo brevioribus subdeclinatis, filamentis basin versus villosis, antheris brunneis, stylo declinato stigmate clavato truncato.

R. modestum is a singularly beautiful addition to the list, of about thirty species, of Sikkim Himalayan Rhododendrons now described. Though not nearly allied to any of those known to me, it is perhaps most nearly to *R. ciliatum*, which differs in being very hairy, in its more erect flowers, campanulate corolla, and its sub-equal, obtuse calyx-segments. These latter in *R. modestum* are very unequal, and all aristulate, a character which I have not seen in any other Sikkim species. It is also remarkable for the brilliant spotting of the dorsal half of the corolla, which coloration is, from the drooping habit of the flower, exposed to the eye, and is very effective. Its exact habitat is not known. It came up amongst seedlings raised from a packet of seeds of Sikkim Rhododendrons (ticketed *R. pendulum*, a totally different plant), which was sent from the Royal Gardens of Calcutta to Kew by Sir George King in 1887. It flowered for the first time in May of this year, in the Himalayan wing of the Temperate House.

Descr.—A small, glabrous, much-branched, leafy shrub, bark of old branches brown, of young green sparsely

lepidote. *Leaves* rather crowded, very shortly petioled, two to three inches long, coriaceous, elliptic-oblong, acute, tip apiculate, base acute, above yellowish-green, opaque, sparsely glandular, puberulous, beneath greenish-yellow, closely lepidote; costa yellow above, produced beyond the tip of the leaf as a stout, obtuse mucro; nerves eight or ten on each side of the costa, very slender above, more prominent beneath; petiole about an eighth of an inch long. *Flowers* six to ten, loosely umbelled at the leafy tips of the branches, drooping; bud-scales few, linear-oblong, deciduous; pedicels one-half to one inch long, decurved, lepidote. *Calyx* deflexed, very oblique, lepidote; segments five, oblong, obtuse, the tips acuminate and aristulate, dorsal one-third of an inch long, anterior about half as long, two lateral intermediate in size. *Corolla* broadly infundibular, pale pink, with bright, blood-red spots on the dorsal half of the tube, extending half way up the dorsal lobe; lobes nearly half the length of the tube, orbicular, recurved, but not strongly. *Stamens* ten, sub-declinate, upcurved, shorter than the corolla, filaments villous towards the base; anthers small, pale brown. *Ovary* short, five-celled, lepidote; style rather longer than the stamens, declinate, glabrous, stigma clavate.—*J. D. H.*

Fig. 1, Tip of leaf, underside, showing the produced midrib and lepidote scales; 2, lepidote scales; 3, calyx and style:—*All enlarged.*

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CONTENTS OF No. 659, NOVEMBER, 1899.

TAB. 7682.—CYPHOMANDRA BETACEA.
„ 7683.—CARLUDOVICA LAUCHEANA.
„ 7684.—HIDALGOA WERCKLEI.
„ 7685.—BEGONIA HEMSLEYANA.
„ 7686.—RHODODENDRON MODESTUM.

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Tab. 7687.

ODONTOGLOSSUM BREVIFOLIUM.

Native of Peru.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Odontoglossum, *H. B. et K.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 561.)

Odontoglossum *brevifolium*; caudice robusto vaginato, vaginis ovatis acuminatis brunneis, pseudobulbis approximatis ovato-oblongis compressis marginibus acutis unifoliatis, folio 6–10 poll. longo ovato-oblongo obtuso v. retuso basi in petiolum brevem crassum canaliculatum constricto crasse coriaceo, supra saturate luride viridi, subtus pallidiore, nervis numerosis, scapo simplici robusto squamis ovatis scariosis brunneis distantibus ½ poll. longis instructo, racemo fere pedali cernuo v. inclinato multifloro, rachi robusto viridi, bracteis squamis pedunculi consimilibus, pedicellis cum ovariis 2-pollicaribus, floribus 2–2½ poll. diam. ambitu orbicularibus, sepalis petalisque consimilibus orbicularibus breviter unguiculatis crassiusculis castaneo-rufis vernicosis marginibus crispatis aureis, labello sepalis breviore unguiculato late obovato v. obcordato, ungue rubro basi utrinque auriculato medio calloso, columna brevi crassa bialata alis obtusis, clinandrio apice denticulato.

O. brevifolium, *Lindl. in Benth. Pl. Hartweg.* p. 152; *Fol. Orchid., Odontogloss.* p. 21. *André in Illustr. Hortic.* vol. xxi. (1874) p. 74, t. 170. *Walp. Ann.* vol. vi. p. 846. *Warn. & Williams, Orchid. Album*, vol. i. t. 27. *Cogn. Dict. Icon. Orchid., Odontogloss.* t. 18.

O. coronarium *var.* miniatum, *Veitch, Man. Orchid.* part i. p. 23.

O. miniatum, *Hort. ex Veitch l.c.*

O. Candelabrum, *Hort. Linden ex Veitch.*

Opinions differ as to the claims of *Odontoglossum brevifolium* to be considered specifically distinct from *O. coronarium*, Lindl. They are regarded as varieties in Veitch's excellent "Manual;" to which is added as another variety *O. chiriquense*, Reichb. f., but which latter, as Rolfe has pointed out (Orchid. Rev. vii. p. 49), differs far more from both than these do from one another. Referring to Mr. Rolfe, who kindly aids me in all my labours on Orchids for the Magazine, he informs me that *O. brevifolium* is well distinguished from *O. coronarium* by habit, by the closer pseudobulbs, larger (not smaller, as stated in Veitch's "Manual") flowers, and shorter column. They further come from different countries, *O. coronarium* from New Grenada, *O. brevifolium* from Peru, near Loxa, and differ in the first

named being a very shy, and the latter a very free flowerer. The figure of a flower of *O. coronarium* in the "Manual" exactly corresponds to that of our plant, except in being rather smaller, and having a longer column. It should be borne in mind that *O. brevifolium* had not flowered in Europe when the "Manual" appeared, and that the size of its flowers was presumably taken from the original Herbarium specimens of Hartweg. How the name *miniatum*, Hort., arose is unknown, it would imply that the flowers were vermilion coloured or scarlet.

O. brevifolium was introduced by Linden, under the name of *O. Candelabrum*. For the loan of the magnificent specimen here figured I am indebted to Sir Trevor Lawrence, Bt., M.P., in whose unique collection it flowered in April of this year.

Descr.—*Rootstock* prostrate, almost as thick as a swan's quill, clothed with distichous, imbricating, brown, ovate, acuminate, imbricating scales an inch long. *Pseudobulbs* two inches long, rather crowded, ovate-oblong, compressed, with acute margins, smooth, green. *Leaf* solitary, six inches long by three broad, ovate-oblong, tip retuse, base contracted into a very stout, short, channelled petiole, thickly coriaceous, lurid green and shining above, paler beneath. *Peduncle* stout, green, with a few ovate or lanceolate, scarious, red brown sheaths an inch long. *Raceme* a foot long, inclined or drooping, many-fld., rhachis green; bracts like the sheaths on the peduncle; pedicels with ovary two inches long. *Flowers* orbicular in outline, two to two and a half inches broad. *Sepals* and *petals* subsimilar, nearly orbicular, shortly clawed, bright reddish-chestnut coloured, with narrow crisped golden margins. *Lip* shorter than the sepals, clawed, limb broadly obovate or obcordate, golden-yellow; claw with two short basal wings, and a complicate lobed callus between them. *Column* very short, red-brown, two-winged.—*J. D. H.*

Fig. 1, Lip and column; 2, side view of base of lip and column; 3, anther; 4 and 5, pollinia:—*All enlarged.*

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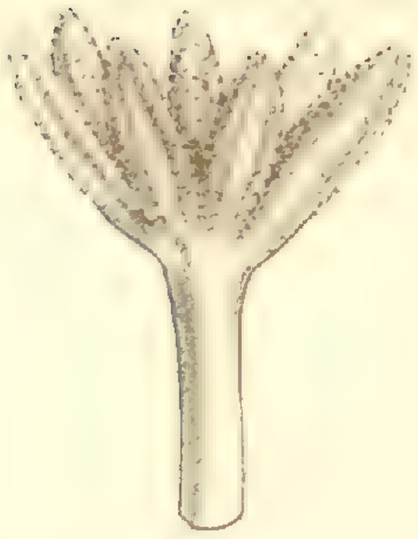

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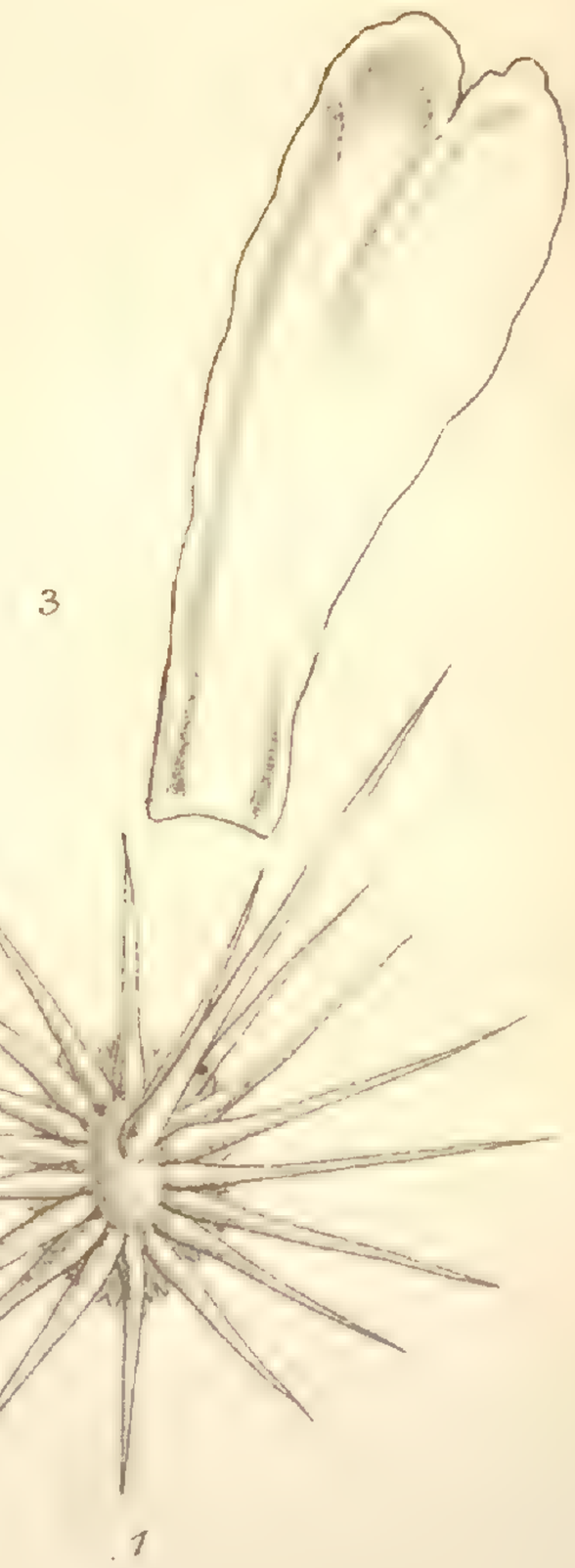

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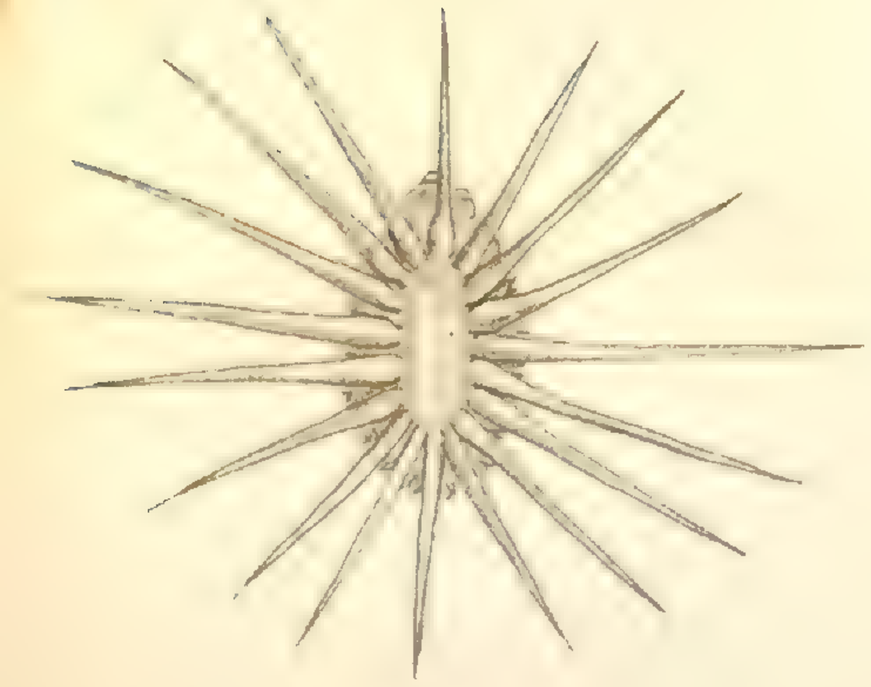

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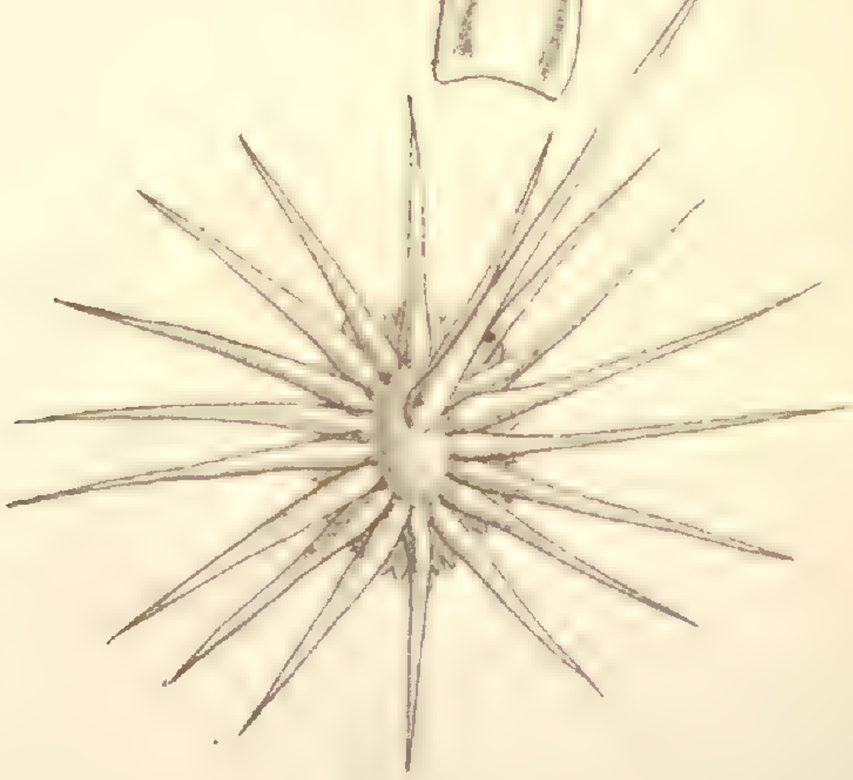

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Tab. 7688.

CEREUS viridiflorus.

Native of New Mexico and Colorado.

Nat. Ord. Cacteæ.—Tribe Echinocacteæ.

Genus Cereus, *Haw.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 849.)

Cereus (Echinocereus) *viridiflorus*; subglobosus ovoideus oblongus v. demum cylindraceus, parce ramosus, ad 13-sulcatus, læte viridis, areolis ovato-lanceolatis oblongisve, aculeis 12–18 arcte radiantibus cum superioribus 2–6 setaceis rubris albis variegatisve, lateralibus caeteris longioribus, centralibus 1–2 robustis rarius 0, floribus ad $1\frac{1}{2}$ poll. diam. apicem versus caulis lateralibus e flavo virescentibus, calycis tubo brevi aculeato, petalis apice bilobis, baccis parvis ellipsoideis spinulosis, seminibus tuberculatis.

C. viridiflorus, *Engelm. in Gray Pl. Fendl. in Mem. Am. Acad.* vol. iv. (1849) p. 50; *Syn. Cact. U.S. in Proc. Am. Acad.* vol. iii. (1856) p. 278, *et Addend. in Trans. Acad. St. Louis*, vol. ii. p. 199; *Cact. Whipple Exped.* p 32; *Cact. Mex. Bound.* p. 28, t. xxxvi.; *Cact. in King's Expl. Rep.* vol. v. p. 118; *in. Simpson's Rep.* 440. *Bigelow, Pacif. Rail. Rep.* vol. iv. pp. 32, 36. *S. Wats. Pl. Wheeler*, p. 9. *Porter & Coulter Fl. Colorad.* p. 48. *Coulter Man. Rocky Mt. Bot.* p. 110. *Salm. Cact. Hort. Dyck.* p. 192. *Lab. Monogr. Cact.* p. 319.—*Bot. Works Engelm.* pp. 124, 136, 158, 224, 227, 231.

Echinocereus viridiflorus, *Engelm. in Wisliz. Tour N. Mexic.* p. 91. *Först. Handb. Cact.* Ed. 2, p. 811. *Schum. Gesamtbeschr. Kakt.* p. 267.

E. Labouretianus, *Lem. Cact.* p. 57.

E. Laboureti, *Först. l.c.*

Cereus viridiflorus is an interesting plant, as being the most northern representative of the vast genus to which it belongs, and which numbers upwards of 300 species. It is a native of Rocky Mountains of N. America, and its subsidiary chains, from the upper Platte River in Wyoming (about lat. 43° N.), south to the Rio Grande del Norte in New Mexico (about lat. 35° N.), Colorado being its headquarters. It would be interesting to know to what elevation it is found, but of this I find no record. Plants of it were received at the Royal Gardens, Kew, in 1897, along with other *Cacti*, from Mr. D. M. Andrews, Nurseryman, of Boulder, Colorado; they have proved to be so far hardy as to require the protection of a screen only in very cold weather. They flower in July.

Descr.—Plant subglobose or ovoid, or elongating into

oblong or cylindric, two to eight inches high, by one and a half to two in diameter, simple or sparingly branched; furrows about thirteen, separated by obtusely triangular ribs, one-third to one-half of an inch broad at the base. *Areolæ* of spines ovate-lanceolate or oblong, about their own length apart. *Spines* twelve to eighteen, with often a few much shorter and more slender at the apex of the areole, pectinately spreading, about a sixth of an inch long, with usually one (rarely two) stouter, longer, central, erect spines; colour of spines very variable, from red-brown to white, or variegated, especially the central. *Flowers* laterally produced on the ribs above the middle of the plant, an inch and a half in diameter. *Calyx-tube* short, spinose, green. *Sepals* and *petals* narrowly cuneiformly oblong, yellow, with a faint pink or greenish tinge, tip two-lobed. *Anthers* yellow. *Stigmas* green. *Fruit* small, ellipsoid, spinulose. *Seeds* tubercled.—*J. D. H.*

Figs. 1 and 2, Areolæ with spines; 3, petal; 4, stamen:—*All enlarged.*

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Tab. 7689.

MINA lobata.

Native of Mexico.

Nat. Ord. Convolvulaceæ.—Tribe Convolvuleæ.

(Genus Mina, *La Llav. & Lex.* Ipomœæ *sect.* Quamoclit (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 871.)

Mina *lobata*; suffrutex glaberrimus, caule gracili volubili ramoso tereti, foliis longe petiolatis late ovato-cordatis acuminatis integris v. late 3–5-lobis integerrimis supra læte viridibus subtus pallidis, nervis utrinque costæ 5–6 arcuatis, nervulis laxe anastomosantibus, floribus numerosis in racemos adscendentes simplices v. bifidos longe pedunculatos sub-recurvos secundis breviter pedicellatis, pedicellis basi minute bracteatis, calycis tubo brevi, segmentis inæquilongis erectis ovatis apiculatis v. subulatis basi dilatatis, corollæ coccineæ demum aureæ tubo brevi valde constricto limbo elongato ampullæformi subpentagono curvo ore constricto, lobis parvis rotundatis, staminibus basi tubi insertis, filamentis gracillimis inæquilongis corolla duplo longioribus basin versus puberulis, antheris oblongis, disco sub 5-lobo, ovario 4-loculari, stylo staminibus æquilongo, stigmate capitato.

M. lobata, *Cerv. in La Llav. & Lex. Nov. Veg. Descr. fasc.* i. p. 3 (1824). *Lindl. in Bot. Reg.* vol. xxviii. (1842) *Misc.* p. 5, *et* t. 24. *Choix. in DC. Prodr.* vol. ix. p. 337. *Paxt. Mag. Bot.* vol. xvi. p. 100, *cum ic. pict. Gard. Chron.* 1886, vol. ii. p. 684, figs. 232, 233. *Regel, Gartenfl.* 1886, p. 644, *cum ic. ex Gard. Chron. iterat. Perring in Deutsch. Gartenzeit.* 1866. p. 544, *cum ic. ex Gard. Chron. iterat. Morren in Ann. Soc. Agric. Gand.*, vol. v. (1849) p. 211, t. 259. *Bull. Soc. Tosc. Hort.* 1889, p. 106. *Duren in Rev. Hort. Belg.* 1891, p. 60, *cum ic. pict.*

M. cordata, *Micheli in Rev. Hortic.* 1898, p. 554, *et* 1899, p. 308, *cum ic. pict.*

Quamoclit Mina, *G. Don, Gen. Syst.* vol. iv. p. 259.

Ipomea versicolor, *Meissn. in Mart. Fl. Bras.* vol. vii. p. 220. *Hemsl. Biol. Centr. Am. Bot.* vol. ii. p. 395, iv. p. 74.

I have no reason to doubt that the plant here figured is *Mina lobata*, Cerv., and of Lindley in the *Botanical Register*; but there is such discrepancy between the descriptions and figures of some later authors who have taken it up, that it might be supposed that two or more species have been included under the name. Of the authors referred to above, Paxton describes the leaves as slightly villous beneath, and the corolla limb as five-angled. Morren also says of the leaves that they are villous beneath, and the limb of the corolla he represents as strongly five-

ribbed and five-lobed at the base; more different from any other figure is his of the tube of the calyx, which is represented as perfectly globose, crowned with a lobed limb, the whole resembling the inferior ovary and calyx of a Rubiaceous plant. G. Don describes the corolla-limb as five-angled; Meissner does not, but says that the raceme is a scorpioid cyme, which it appears to be on a hasty glance, but it is only at first slightly recurved, with secund flowers. Micheli's *M. cordata* represents a very weak, undeveloped state of the species, with all the leaves cordate and undivided, and the very short racemes very few-flowered.

I have retained the generic name of *Mina* for this plant, whilst recognizing its very close affinity with the section *Quamoclit* of *Ipomœa*, from which it differs in inflorescence, in the ampulliform limb of the corolla narrowed upwards to the mouth, and in the very small lobes of the limb. Meissner reduced *Mina* to *Ipomœa*, and being obliged to discard the specific name (*lobata*) as being preoccupied, gave that of *versicolor* as descriptive of the change of colour in the corolla from red to yellow.

Mina lobata is a native of Mexico, where it is frequently cultivated. There are specimens in the Kew Herbarium from Mr. Parkinson, late Consul-General in Mexico; from San Luis, Potosi, collected by Schaffner, and from a garden in Orizaba, by Botteri. Prof. Micheli's plant (*M. cordata*) was raised from seeds collected in the States of Michoacan and Guerrero, in Western Mexico, whether from an indigenous plant is not stated.

Descr.—A tall, very slender, branching, leafy climber, with terete, green, twining stem and branches. *Leaves* long-petioled, one to four inches long and broad, ovate- or orbicular-cordate, acuminate, entire or broadly three- to five-lobed, quite entire, thin, bright green above, pale beneath, with arching nerves, and loosely anastomosing nervules. *Racemes* three to five inches long, terminal, ascending, slender, curved, simple or forked at the base, many-flowered. *Flowers* secund, about an inch long, shortly pedicelled; pedicels minutely bracteate at the base. *Calyx-tube* short; lobes five, more or less unequal, from subulate with a dilated base to ovate and apiculate. *Corolla* bright red, passing into orange-yellow; tube very

short, narrow, contracted; limb long, narrowly ampulliform, truncate at the base, narrowed upwards to a small mouth with five short rounded lobes. *Stamens* twice as long as the corolla; anthers oblong, yellow. *Stigma* capitate.—*J. D. H.*

Fig. 1, Calyx and pistil; 2, portion of corolla laid open, and stamens; 3 and 4, anthers; 5, base of calyx, disk and ovary; 6, stigmas:—*All enlarged.*

M.S. del. J.N.Fitch lith.

TAB. 7690.

EPIPACTIS GIGANTEA.

Native of Western N. America and Temperate Asia.

Nat. Ord. ORCHIDEÆ.—Tribe NEOTTIEÆ.

Genus EPIPACTIS, *Haller*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 619.)

EPIPACTIS *gigantea*; caule elato robusto folioso, foliis inferioribus ovatis oblongisve superioribus 4–8 pollicaribus sensim in bracteas abeuntibus lanceolatis acuminatis acutisve glaberrimis v. nervis subtus subscaberulis, racemo glabro v. puberulo, bracteis foliaceis inferioribus 3–4 poll. longis lanceolatis acuminatis, floribus remotis breviter graciliterque pedicellatis, sepalis ¾ poll. longis viridibus rubro striatis, dorsali late ovato erecto subgaleato, lateralibus ovato-lanceolatis subacutis, petalis sepalis brevioribus oblique ovatis obtusis pallide roseis rubro-striatis, labello roseo sepalis æquilongo, hypochilio saccato lobis lateralibus erectis late ovatis apice rotundatis, epichilio ovato v. ovato-lanceolato subacuto rubro, capsula patula v. pendula brevi et ellipsoidea, v. longiore lineari-oblonga.

E. gigantea, *Dougl. ex Hook. Fl. Bor. Am.* vol. ii. p. 220, t. 202. *S. Wats. Bot. King's Exped.* p. 341; *Bot. Calif.* vol. ii. p. 137. *Coulter, Man. Rocky Mt. Flor.* p. 343. *Hemsl. Biol. Cent. Amer. Bot.* vol. iii. p. 304. *Lindl. in Benth. Pl. Hartweg.* p. 53.

E. americana, *Lindl. in Ann. Sc. Nat.* vol. iv. (1840) p. 385; *Gen. & Sp. Orchid.* p. 462.

E. Royleana, *Lindl. in Royle, Ill. Bot. Himal.* p. 368; *Gen. & Sp. Orchid.* p. 461; *in Journ. Linn. Soc.* vol. i. (1857) p. 174. *Hook. f. Fl. Brit. Ind.* vol. vi. p. 126.

?E. Thunbergii, *A. Gray, in Perry Exped. Japan.* vol. ii. p. 319.

CEPHALANTHERA Royleana, *Regel in Act. Hort. Petrop.* vol. vi. (1879) p. 490. *Boiss. Fl. Orient.* vol. v. p. 63.

The species of *Epipactis* have never been satisfactorily discriminated or described. They are extremely variable, both in foliage and floral characters; as many as seventeen forms, varieties, or species having been referred to the European *E. latifolia*, All. One alone, *E. gigantea*, is known as a native of N. America, and it is there confined to the western half of the continent, ranging from British Columbia to California and Mexico, and further east from Idaho to Texas. It reappears in the Old World in the Corea (and Japan, if A. Gray's *E. Thunbergii* is conspecific), and Manchuria, and thence extends to the mountains of Western China, and along the Himalaya at elevations of seven thousand to twelve thousand feet to Kashmir. It is quite hardy at the Royal Gardens, Kew, flowering in June.

DECEMBER 1ST, 1899.

Descr.—*Stem* tall, stout, leafy. *Lower* leaves ovate or oblong, upper much longer, four to eight inches long, lanceolate, acuminate, glabrous, or with the nerves beneath minutely scaberulous. *Raceme* glabrous, or minutely puberulous, elongate; flowers distant; bracts foliaceous, lower three to four inches long, lanceolate, acuminate; pedicels with the ovary one-sixth to one-fourth of an inch long. *Sepals* three-fourths of an inch long, green, streaked with dull red nerves; dorsal erect, broadly ovate, concave; lateral ovate-lanceolate, sub-acute, recurved. *Petals* rather shorter than the sepals, erect, obliquely ovate, obtuse, pale pink, with red nerves. *Lip* as long as the sepals; hypochile saccate, its lateral lobes erect, broadly ovate, strongly nerved, tip rounded, pale rose-coloured tuft streaked with dark red externally, deeper red within; epichile ovate or ovate-lanceolate, from a dilated, almost two-lobed base, sub-acute, dark red. *Column* stout, with two bluish lateral horns below the clinandrium.—*J. D. H.*

Fig. 1, Lip; 2, side, and 3, front view of column and anther:—*All enlarged.*

M.S. del, J.N. Fitch lith.

Vincent Brooks, Day & Son Lith.

Tab. 7691.

KLEINIA Grantii.

Native of E. trop. Africa.

Nat. Ord. Compositæ.—Tribe Senecionideæ.

Genus Kleinia, *Haw.*; Senecio *sect.* Kleinia (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 449.)

Kleinia *Grantii*; glaberrima, carnosa, rhizomate nodoso, caule robusto decumbente folioso dein adscendente, foliis confertis 2–2½ poll. longis ovalibus v. spathulato-oblongis obtusis (exsiccitatis apiculatis) integerrimis in petiolum crassum angustatis crasse carnosis pallide viridibus utrinque concoloribus, pedunculo terminali 10-pollicari robusto nudo infra medium pallide purpureo superne pallide viridi ramoso, ramis 3 3–4-pollicaribus erectis viridibus monocephalis squamis paucis parvis lanceolatis membranaceis deciduis instructis, capitulis erectis magnis, involucro ⅔ poll. longo cylindraceo ½ poll. diam. herbaceo basi nudo rotundato v. subintruso, bracteis ad 12 ⅓ poll. longis glaberrimis lævibus (exsiccatis sulcatis) marginibus cohærentibus apicibus liberis lanceolatis acuminatis, floribus bracteis longioribus in capitulum hemisphæricum sanguineum 2 poll. diam. confertis radii femineis disci hermaphroditis, corollæ tubo elongato gracili, lobis lanceolatis obtusis papillosis, antherarum connectivo elongato, stylorum ramis fl. fem. elongatis longe penicillatis recurvis, fl. hermaph. brevioribus, achæniis teretibus glabris, pappo albo involucro vix excedente.

Notonia Grantii, *Oliv. & Hiern, Fl. Trop. Afr.* vol. iii. p. 407.

N. sempervirens, *Aschers. in Schweinf. Beitr. Fl. Æthiop.* p. 152.

Senecio (Kleinia) longipes, *Baker in Kew Bulletin*, 1895, p. 217.

Kleinia Grantii was discovered by the late Lt.-Col. Grant, during his adventurous journey with Capt. Speke, in the Usagora district, or province, of what is now German East Africa. The precise locality of the specimen in the Kew Herbarium is M'búmi, lat. 6° 56′ 30″ S., which is on the coast range. The species is not indicated in Col. Grant's enumeration of his collections in the "Linnean Transactions" (vol. xxix. 1875), but in a note attached to the specimen he refers to the Appendix to Speke's narrative, where the plant is alluded to as "*Kleinia* ? sp., diminutive, with pale port-wine flowers. Alt. 1750 ft., fl. October." It has since been found in Abyssinia by Schweinfurth and de Riva; and more recently in Somaliland, on the Golis range, by Miss Edith Cole, whose

specimens were described by Mr. Baker as *Senecio* (*Kleinia*) *longipes*. A plant of it, given by Miss Cole to the Botanic Garden of the University of Cambridge, flowered there in June, 1899, and was sent for figuring in this Magazine by Mr. Lynch.

Descr.—A fleshy, perfectly glabrous herb. *Rootstock* nodose, emitting stout vermiform roots. *Stem* six to eight inches long, decumbent, copiously leafy, pale purplish. *Leaves* crowded, spreading and recurved, thickly fleshy, two to two and a half inches long, oval, oval-oblong, or spathulately oblong, obtuse (apiculate when dry), quite entire, very pale green, concolorous on both surfaces, base narrowed into a short, very stout petiole. *Peduncle* terminal, ten inches high, stout, quite naked, pale, grey-purple below the middle, green above it, dividing at the top into three stout branches or pedicels, each bearing a solitary large head of flowers. *Pedicels* green, bearing scattered, small, lanceolate, membranous, deciduous scales. *Involucre* quite naked at the rounded and slightly intruded base, bright green, cylindric, two-thirds of an inch long by half an inch in diameter; bracts about twelve, cohering in a smooth tube for two-thirds of their length, above it free, lanceolate, acuminate, quite smooth and green to the tips, grooved when dry. *Flowers* forming a hemispheric scarlet head two inches in diameter, all much longer than the bracts, outer female, inner hermaphrodite. *Corolla-tube* slender, lobes lanceolate, obtuse, papillose. *Style-arms* of fem. fl. very long, with long, linear penicillate tips, of hermaph. fl. much shorter, with shorter tips. *Anthers* with the connective produced into a subulate erect appendage nearly half as long as the cells. *Achenes* quite smooth, cylindric, glabrous. *Pappus* copious, white; hairs flexuous, shorter than the corolla-tube.—*J. D. H.*

Fig. 1, Female flower; 2, hermaph. do.; 3, stamens; 4, styles of hermaph. flower:—*All enlarged.*

INDEX

To Vol. LV. of the THIRD SERIES, or Vol. CXXV. of the whole Work.

7663 Acacia sphærocephala.
7632 Acalypha hispida.
7654 Alnus nitida.
7667 Aloe Schweinfurthii.
7675 Asparagus scandens.
7669 Aster Piccolii.
7685 Begonia Hemsleyana.
7673 „ sinensis.
7657 „ venosa.
7680 Berlandiera tomentosa.
7674 Calathea picta.
7683 Carludovica Laucheana.
7640 Ceanothus integerrimus.
7648 Cereus Paxtonianus.
7688 „ viridiflorus.
7660 Chrysanthemum nipponicum.
7672 Coleus thyrsoideus.
7665 Crassula pyramidalis.
7682 Cyphomandra betacea.
7653 Cyrtanthus parviflorus.
7655 Dahlia Maximiliana.
7639 Dendrobium capillipes.
7676 Dorstenia Phillipsiæ.
7642 Dryandra calophylla.
7638 Elæagnus macrophylla.
7670 Ephedra altissima.
7641 Epilobium obcordatum.
7690 Epipactis gigantea.
7635 Gaultheria trichophylla.
7637 Gentiana Burseri.
7645 Gynopleura humilis.
7668 Heliophila scandens.
7684 Hidalgoa Wercklei.
7647 Impatiens Roylei, *var.* pallidiflora.
7651 Incarvillea variabilis.
7661 Iris Delavayi.
7678 Kalanchoe thyrsiflora.
7691 Kleinia Grantii.
7659 „ pendula.
7644 Kniphofia Tuckii.
7633 Lewisia Tweedyi.
7634 Lilium rubellum.
7677 Lonicera Hildebrandiana.
7664 Masdevallia muscosa.
7636 Meconopsis heterophylla.
7689 Mina lobata.
7658 Moræa sulphurea.
7671 Mussænda capsulifera.
7652 Nicotiana sylvestris.
7687 Odontoglossum brevifolium.
7643 Passiflora pruinosa.
7681 Rhododendron dilatatum.
7686 „ modestum.
7646 Rosa acicularis, *var.* nipponensis.
7666 Rosa xanthina.
7649 Silene Fortunei.
7679 Stylidium crassifolium.
7656 Veronica Dieffenbachii.
7650 Yucca elata.
7662 „ Whipplei.

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CONTENTS OF No. 660, DECEMBER, 1899.

TAB. 7687.—ODONTOGLOSSUM BREVIFOLIUM.
" 7688.—CEREUS VIRIDIFLORUS.
" 7689.—MINA LOBATA.
" 7690.—EPIPACTIS GIGANTEA.
" 7691.—KLEINIA GRANTII.

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